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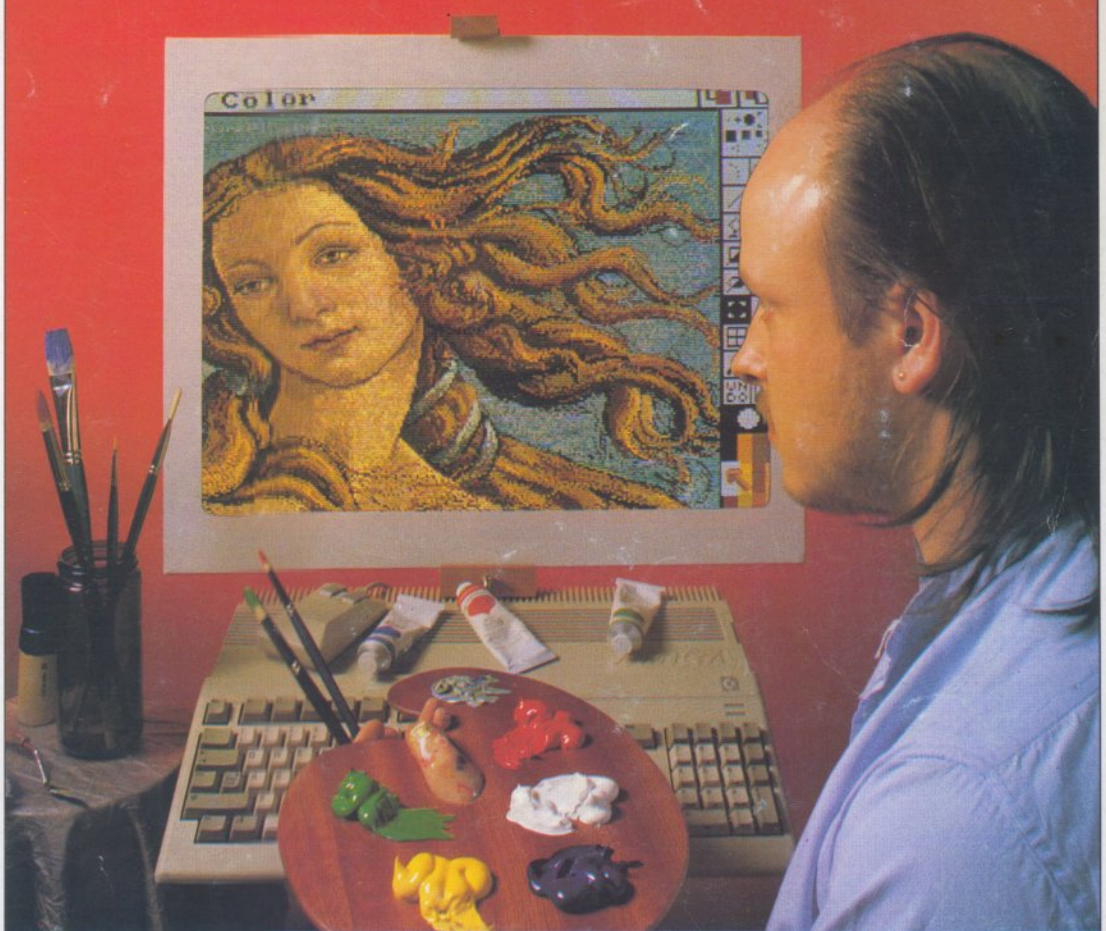
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SHOPPING LIST

This is an alphabetically sorted, quick-reference list to everything in the issue. Just look for the relevant name of the software, hardware or subject and it should be here. Some things are cross-referenced under more than one heading for ease of use.

WHO ARE WE?

CONTACTS

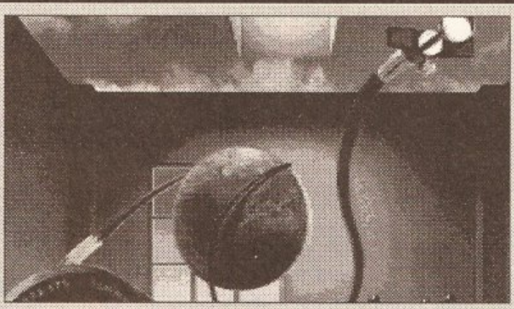
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Paint programs revealed in all their glory.

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AMIGA ANSWERS

Whatever your problem with the Amiga we will solve it – get in touch with our panel of experts ...... page 17

PUBLIC DOMAIN WORLD

Everything you need to know about finding and using free software can be found in our special section starting on page 113.



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Digita get up in the clouds

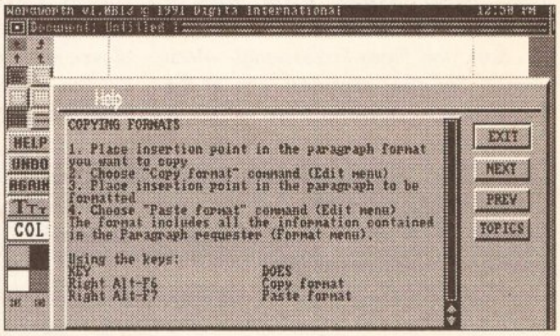
What masterpieces are about to be composed on Digita's new *Wordworth* word processor?

With the look and feel of Workbench 2 and the ability to use pictures, multiple fonts and colours in the same document, *Wordworth* is likely to raise the standards in the Amiga's tired word processor market. It comes with an impressive list of features: headers and footers, variable page sizes, extensive editing tools, speech, and so on.

Output can be sent to any Preferences-based printer. As well as reading and writing ASCII and IFF format files, *Wordworth* can support formats used by other word processors such as *Protext*.

Also included is a 110,000-word English dictionary and a thesaurus, both by Collins. The price is £129.95 including VAT.

Digita International
☎ 0395 270273



Wax lyrical with a copy of the new *Wordworth* word processor, or should that be prose-setter?

User group news

by Janet Bickerstaff

Are you getting the most from your Amiga? If not, why not join a user group. There are ICPUGs (Independent Commodore Products Users Group) in many parts of the country. One friendly crowd is ICPUG South West, which meets at the Queen's Arms Hotel, Charmouth, near Bridport, Dorset, on the second Sunday of the month at 10 am.

Members take their own machines along to the meetings. All machines are covered. The organiser, Pete Miles, is the organiser for the whole of the ICPUG Amiga PD software library – around 800 disks in all – which are free to members. Being a member of a user group is your chance for individual help and advice, so get in touch.

Peter Miles, ICPUG South West
☎ 0297 60339

RAM it home

by Cliff Ramshaw

Amiga 500 owners now have even more ways to increase their computer's memory, with the announcement by Supra of their 500RX RAM expansion unit.

It comes supplied with 2Mb already installed, with the capacity to take a further 6Mb internally to bring the 500 up to its full quota. The unit also takes zero wait state, fast RAM with hidden refresh.

With vital statistics of 9.5" long by 2.5" high by 1" wide, it should leave plenty of desk-space free. It plugs into the Amiga's expansion slot, but includes a throughport – a major advantage for A500 owners, since it means further peripherals such as the A590 hard drive can be added afterwards. Also, any RAM in the A590 can be used in conjunction with the Supra 500RX RAM (up to the Amiga's maximum of 8.5Mb). The Supra 500RX with 2Mb is £169 from WTS.

Supra ☎ 010 1 503 967 9075
WTS ☎ 0582 491949

A hello to arms

Robotics comes to the Amiga with the Alfred Robot System from Think. Alfred is a miniaturised replica of the industrial robots built by HadenHill Systems – a mechanical arm with five axes of revolution – and is intended primarily for educational use.

It is also reckoned to provide some 'stimulating activities of therapeutic value for disabled people'.

Software is included that displays motor positions, learns and replays robot movements and allows the student to relate software instructions to robot positions. The arm and software costs £360.

Think ☎ 021 384 4168

Plug into the fast lane

by Cliff Ramshaw

Shift your Amiga into overdrive with two new accelerator boards from the American firm Great Valley Computers.

Called the A3050, the first is a revamp of their older 50MHz 68030 accelerator board. It comes with 4Mb of RAM as standard, and is expandable up to 32Mb. An optional extra is either a 120Mb or half-height 340Mb Maxtor hard drive unit. All of this can be fitted into the A2000's CPU slot, leaving the expansion slots free for further goodies. The base model, with 4Mb, is available for £1995.

The second board, the A2000 Combo, also uses a 68030, and is available in two versions: with a clock speed of 22MHz and 1Mb of RAM, expandable to13Mb; and a clock speed of 44MHz with 4Mb of RAM expandable to 16Mb.

Both versions of the accelerator boards include GVP's Series II autobooting SCSI controller and come with connectors for attaching internal and external drives. An optional hard drive is also available and has a capacity of up to 340Mb..

The 22MHz version starts at £799 and the 33MHz version at £1495, but these prices are provisional at present.

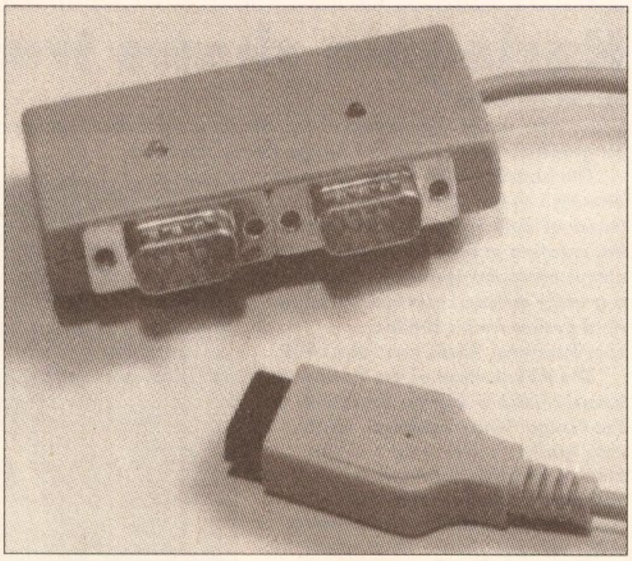
GVP ☎ 010 1 215 337 8770
Power Computing ☎ 0234 843 388

Switching made safe

No more yanking mice from their homes and feverishly slamming joysticks into place when playing a two-player game *(This is when I'm out of the office is it? – Ed)*.

With Josty UK's new Roboshift interface, both a mouse and joystick can share the same port. Selection between the two devices is achieved by pressing either the left mouse button or the joystick fire button.

Josty UK
☎ 0642 769000



Both your mouse and joystick can comfortably share the same hole with Josty UK's latest two-into-one interface.

Cast your net wide

Better international communications are now a possibility with the introduction of The Direct Connection. This allows anyone with a modem access to USENET News, the world's largest on-line conferencing network.

USENET is different from ordinary bulletin boards in that it is not based on a single computer that users call up, but is instead a system whereby messages are passed across an enormous network of machines. It carries information on many diverse subsections (eg Amigas, sports, literature, jobs, games) and is supported by many universities and colleges, user groups and government bodies.

Normally this information is only available to users of large computer systems, but The Direct Connection allows a home user with a modem and communications software to get connected for £11.75 a month. A free on-line demonstration is available by dialling:
☎ 081 853 3965.

The Direct Connection
☎ 081 853 2283

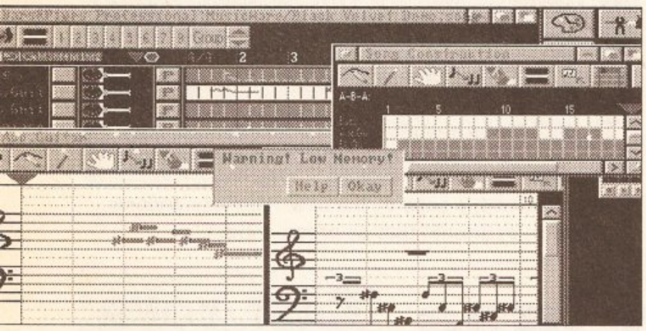
Bars and Pipes turns professional

by Jon Bates

The ever colourful and unique *Bars and Pipes* now has a business-like brother.

Bars and Pipes Professional, which *Amiga Shopper* reported was at the Frankfurt Music Show in a test version, is now released in the UK. Along with professional traits, such as proper notation display, editing and print out, it has many other improvements and a host of new features.

The main screen now has movable windows; the transport controls are resizable and in a movable window; editing is also possible with an event editor display. The 'toolbox' of goodies that processes the data in a seeming artificially intelligent fashion has been enlarged with Groove designed quantize, Tempo Tap, Pattern looping and more new tools are on the way – the more usual tools and add-ons are completely compatible. Song Construction has been enhanced graphically and there is an automated mix-down window as standard.



Bars and Pipes is given a dose of bells and whistles to help place it firmly in the professional mould.

For professional users it will line up with video timing by using a Time-Line facility that positions cues exactly in SMPTE display. For 1 Mb owners there are now four memory-saving features to maximise the space available and the program comes with some demonstration titles from the MusicWare catalogue – the brand name of the pre-arranged Midi song disks that American authors, Blue Ribbon Soundworks (formerly Blue Ribbon Bakery) are now handling.

The UK price has yet to be fixed, but should be available by our next issue – on sale June 6 – which will also be carrying a full review.

Blue Ribbon Soundworks
☎ 010 1 404 377 1514

Music to your wallet

by Mark Smiddy

Musicians will be pleased to hear that a new music authoring tool has been released by AmigaNuts United. *OctoMED* is an eight-channel music synthesizer, based on *MED3*.

Features include: 16-channel MIDI, sound sampler with editing facilities, and a synthesizer. Priced at £10, users get *OctoMED*, two demo tracks, example samples and instruments, plus a PD player.

AmigaNuts United
☎ 0703 785680

Look, up in the sky!

Is it a bird, is it a plane? No, it's a database. *Superbase Professional* 4, from Precision Software, swoops into the Amiga market. An update on the 1988 version 3, it offers enhanced form design, database definition and programming. Documentation comes with a tutorial and applications examples.

The program handles graphics and sound samples, and can save and load files in *dBase*, *Lotus* 1-2-3 and *Excel* formats. It costs £411.19 – *Superbase* 3 users can upgrade for £88.13.

Precision Software
☎ 081 330 7166

Trade show gets serious

by Janet Bickerstaff

CDTV has been hailed as the C64 of the 90s by Commodore chief, Steve Franklin. Speaking to dealers at the European Computer Trade Show, London, last April, he said: "Computers don't turn me on. This is the first product from a computer company that really excites me." Dealer reaction was mixed, with one heard to mutter, "Does he know about the Amiga?"

Commodore sales manager Kelly Sumner told dealers that the marketing of CDTV must be to dissociate the concept from computers. He called for a four-foot exclusion zone around in-store displays to ensure the public perceived CDTV as a non-technical, user-friendly unit.

At the show itself, entertainment software predominated. However, educational software for the Amiga showed an upturn as it is now being marketed by several companies – Alternative Software, Genisoft and Soft Stuff all had a good selection. Soft Stuff will also be marketing *Fun School* for CDTV.

Digita International, HiSoft and Precision were all showing new business software. HiSoft previewed *HiSoft Basic* 2 and Precision Software presented *Superbase Professional* 4.

HiSoft ☎ 0525 718181
Precision Software
☎ 081 330 7166

Make animation child's play

by Stan Hayward

Chromacolour has relaunched *Softoons*, a low-cost line-test program, for the Amiga 500.

Though real animators don't use computers, all professional studios now use computer-based line-test machines for checking the timing and movement of a sequence prior to shooting.

Such machines were typically in the £15-20 thousand range, but in 1989 Chromacolour, an animation equipment and materials supplier, launched a line-test system at a cost of around £9 thousand.

The response from the animation industry was predictably bad, but surprisingly there were numerous enquiries from schools, hospitals, and even prisons who saw the machine as a low budget teaching system. In response to this, Chromacolour has recently repackaged and relaunched the program to work on an A500 as a personal – as against studio-based – system.

The total system comprises A500, 20MB hard disk, digitiser, genlock, basic video equipment for animation, and the *Softoons* line-test program. For those who already have an A500, *Softoons* and digitiser can be added for £750. A professional system with 9Mb of memory and necessary video equipment comes in at around £4,000.

Chromacolour is developing other programs specifically for the schools and home animation market and expects to launch a very simple animation package later this year that children can learn very quickly.

Chromacolour
☎ 081 675 8422

● Stan Hayward is the creator of the TV cartoon, *Henry's Cat*.

Mouse takes off

Amiga owners are spoilt for choice so far as replacement mice are concerned. Now Logitech, purveyor of mice to the PC world, has launched its first for the Amiga. Called the LogiMouse Pilot, it uses an opto-mechanical technique for determining its positions, comes with a self cleaning roller ball and costs £27.

Logitech ☎ 0753 37222

Harlequin shows true colours

by Cliff Ramshaw

Users who are really serious about Amiga graphics will be interested in the Harlequin 32-bit graphics board from the Amiga Centre Scotland.

The board, which attracted much attention at the CEBIT show in Hanover during March, will enable the creation of broadcast-quality full-colour computer-generated images at a greatly reduced cost compared to rival systems with similar specifications. Prices start at £1400.

The introduction of the Harlequin board marks a change in attitude of the Amiga Centre Scotland, which sees itself as moving up-market. From now on they intend to concentrate on business and educational applications, believing that most people are unaware of the Amiga's power in these fields.

Amiga Centre Scotland
☎ 031 557 4242



Hi-res Amiga art takes a new turn as Harlequin 32-bit graphics board supplies a view with a room.

Zen and the art of anti-aliasing

Fed up with jagged edges on your fonts? Then *Anti A* from Zen Computer Services could be the answer to your problems. This £40 piece of software will anti-alias normal Amiga fonts in nine scaled-down versions using four brightness levels to smooth out those jaggies. Because they are stored in ColorFont format they can also be used by any program that supports it.

It will run on Amigas using V1.3 or V2, handles fonts up to 300 point (or 200 point on a 512K machine), but for the larger point sizes a 68020/30 would speed things up.

Zen Computer Services
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New York goes Amiga crazy

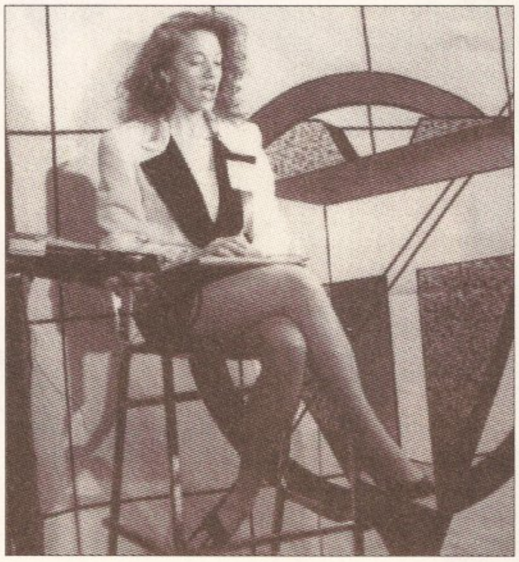
SHOW REPORT

Our prolific American correspondent Morton A Kevelson brings you a special report on the US Amiga scene, visiting two recent New York shows held within a month of each other which were jam-packed with launches and exciting news

The horrendously expensive world of pop video production could soon be within reach of Joe Public, it was revealed at this year's New York Amiga World Expo.

Using an Amiga-based video system, musician and producer Todd Rundgren has shown how telephone number-sized budgets can be slashed with artistry, imagination and toast. Mr Rundgren, of Utopia and Meatloaf's *Bat Out Of Hell* fame, provided the highlight of the show with his new video, put together with the aid of NewTek's Video Toaster.

Jaded hacks were wowed during a NewTek press conference at the New York Hilton venue with the 7,200-frame offering.



Continuous live demonstrations of the Video Toaster by the lithe and lovely Kiki Stockhammer, left. NewTek has clearly demonstrated that good low-level support will catch the public's eye.

The Amiga 500 below contains the following ICD products: Novia 20i, Flicker Free Video adapter, AdRAM 500 with 6 Mb RAM, AdSpeed 14.3 MHz accelerator.



All change please

The *Change Myself* video, released in conjunction with Todd's latest album, *2nd Wind*, on the Warner Brothers label was produced entirely by Todd in his own home using the Video Toaster and the *Lightwave 3D* modelling and animation software included in the package. The entire video was completed in less than three months. By comparison, it would have taken six months at a cost of $2 million using conventional techniques and an independent producer.

Some off-the-cuff remarks by Erick Moody, president of Interactive Video Systems, illustrate the feelings generated by the first samples of what could be done with the Video Toaster.

"I can see what he (Mr. Rundgren) is doing and how he is doing it, and I can see myself using the same equipment, but there is no way that I can come up with the kind of images that he has in this video."

That is what makes Todd Rundgren an artist. He can take these products and make them do things that we could never dream of, in spite of our understanding of how these tools work. I expect that we will be seeing more examples of unique artistic expression *(and an awful lot of revolting acid house demos – Ed)* as the low cost of the Video Toaster puts the means of video production into the hands of the original artist.

Can't vid by toast alone

The Video Toaster and an Amiga do not represent a complete video studio. As well as the mandatory video recorder and display monitor, several additional sophisticated electronic devices are required. A key component is the time base corrector (TBC) which stabilizes the signal produced by a video tape recorder. Without a TBC, multiple generation video tape copies would be impossible. Several TBCs could be found at the show at price in line with an Amiga-based video studio. These

Video on view

Here's what AmigaWorld Expo had to offer with regard to video-related products. Bear in mind that most of these items, including the Video Toaster, are for use with the American NTSC video standard. In view of where the Amiga market is located, I expect developers will be offering European PAL versions as soon as they possibly can.

Active Circuits was offering RasterLink, formerly ImageLink, for $199.95. RasterLink, which does not originate on an island in the Caribbean, is a powerful image conversion and imaging system that is both flexible and expandable. RasterLink can convert images between a variety of graphic file formats on the Amiga, PC and Macintosh computers. TGALink is a $299.95 expansion module for RasterLink which allows direct control of Truevision TARGA and ATVista frame buffers using an Amiga equipped with an XT or AT Bridgeboard. CineLink is a $299.95 expansion module which can output directly to high-resolution, 4000-line, 24-bit, digital film recorders from Lasergraphics and Presentation Technologies. Magnum/650 is a $4995 removable media, erasable, optical SCSI disk drive. Also in the Active Circuits booth was the NEC PC-VCR which can be controlled from the Amiga via the RS-232 port. Last, but not least, Active Circuits was demonstrating its CD-ROM file system software on an NEC CD-ROM player which was installed in the 5.25-inch drive bay of an Amiga 2500.
Active Circuits, 1985 Highway 34 A-4, Wall, NJ 07719
☎ 010 1 908 974 1616.

ASDG, in conjunction with its continuing effort to provide all of the solutions for the Amiga's image processing needs, announced new driver modules to be included with the $240 *Art Department Professional* 1.0.3. Registered owners of prior releases will receive the upgrade at no charge. *ADPro* 1.0.3 will provide direct control of the Impulse FireCracker 24 display board and the PP&S FrameGrabber video digitizer. Image loader modules for files stored in *MacPaint* and HAM-E formats will be included as well. This brings to 21 the total number of drivers which will be included with *ADPro*. ASDG also announced *ADPro* support for a number of high end imaging peripherals. The $200 Epson ES-300C driver (Summer 1991) will let *ADPro* control this $1999, colour, flatbed, A4-size (8.5 by 11.5 inches), 600-dpi scanner. A $450 driver will also be available (Summer 1991) for the $4500 Kodak SV6510 dye sublimation printer. Available now is the $250 driver for the Polaroid CI-3000 Digital Film Recorder.
ASDG, 925 Stewart Street, Madison, WI 53713 ☎ 010 1 608 273 6585.

Black Belt Systems was selling HAM-E, an RGB port display device which adds two imaging modes to those already available with the Amiga. NOTE – Ham-E is PAL compatible. The first mode will display up to 256 colours out of a palette of 16,772,216 that is based on 24 bit-planes. The second mode supports the simultaneous display of 262,144 colours based on 18 bits per pixel. HAM-E offers a resolution of 384-colour or luminance changes per scan line by 482 lines in NTSC mode and 570 lines in PAL mode while outputting standard RGB video. Black Belt Systems is now offering an improved version of HAM-E. The Anti-Alias Engine is a real-time, special-purpose, maths processing unit that doubles the number of pixels that HAM-E sends to the monitor. This does not increase the resolution of the resulting image, however, although the Anti-

Alias Engine does apply real-time smoothing of the image. HAM-E with the Anti-Alias Engine will sell for $299.95. If you bought HAM-E after February 15th, you can upgrade it with the Anti-Alias Engine for $149.95. If you acquired HAM-E before this date you will receive a discount on the upgrade fee. The $299.95 HAM-E package includes *Image Professional*, a fully featured 24-bit paint and image processing program.
Black Belt Systems, 398 Johnson, Glasgow, MT 59230
☎ 010 1 405 397 5599

Digital Creations was showing DCTV, a $495, 24-bit, composite video display adapter for the Amiga. DCTV includes a built in slow scan video digitizer and video painting software. Digital Creations also offers *DCTV Animation* and DCTV-RGB converter, SuperGen, a $749.95 genlock and SuperGen2000, a $1995 genlock.
Digital Creations, 2865 Sunrise Blvd, Suite 103, Rancho Cordova, CA 95670
☎ 010 1 916 344 4825.

InSync is targeting the semi-professional and professional video market with *Transitions*, a collection of disk-based animated sequences for use in commercial video productions. A variety of subjects are available ranging in price from $25 to $80. These are high quality animations suitable for commercial use. InSync also offered *Vidzeen, A Videographer's Guide to Deluxe Paint III* which consists of a tutorial video tape and a companion two disk set.
InSync, 410 Maple Ave, Westbury, NY 11590 ☎ 010 1 516 574 0225.

MAST was showing Colorburst, a $549, 24-bit high-performance video display card for the Amiga. NOTE – Colorburst is PAL compatible. Colorburst features 1.5Mb of video RAM in a 48 bitplane architecture. Colorburst's display resolutions range from 384 to 768 pixels horizontally. Vertical resolution is 580 lines in PAL mode or 480 lines in NTSC mode.
Memory and Storage Technology, 1895 Greg Street, Sparks, NV 89431
☎ 010 1 702 359 0444.

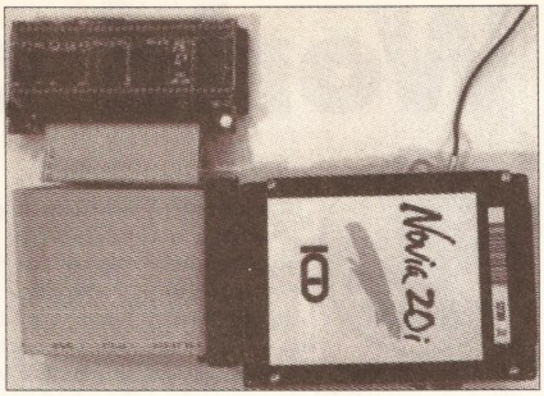
MicroSearch was showing one of the hottest new products at the show. ChromaKey is a $395 device which puts live video in front of Amiga graphics (NOTE -it is not PAL compatible). Keep in mind that Amiga genlocks do just the opposite. Now you too can be a TV weatherman. Both an Amiga and an external genlock are required to use ChromaKey. *(We will keep you posted on a PAL version – Ed)*
MicroSearch, 9896 Southwest Freeway, Houston, TX 77074
☎ 010 1 713 988 2818.

Newtek, in a classic case of the tail wagging the dog, stole the show with the undisputed star, the Video Toaster. In NewTek's massive display booth show goers were able to view Penn & Tellers example of a horrible home made music video, Todd Rundgren's example of a superb home made music video, and continuous live demonstrations of the Video Toaster by the lithe and lovely Kiki Stockhammer. NewTek has clearly demonstrated that good low-level support will catch the public's eye.
NewTek, 215 E. 8th Street, Topeka, KS 66603 ☎ 010 1 913 354 1146.

Spirit Technology announced Studio A, a genlock, encoder, keyer and switcher for the Amiga. Both NTSC and PAL version will be available.
Spirit Technology, 220 W. 2950 South, Salt Lake City, UT 84115
☎ 010 1 801 485 4233

range from $995 for a unit that installs in a vacant PC slot in the Amiga 2000 to $1,295 and up for a selection of stand alone units. These prices are a fraction of what these devices were selling for less than a year ago.

Check on the immediate availability of any product mentioned in this article. Release dates ranged from "two weeks" to "this summer", which means you could be in for a wait if you order blindly.



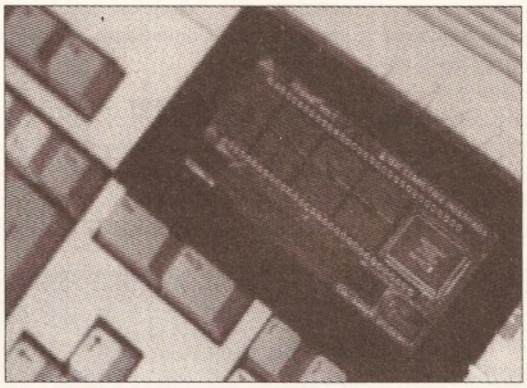
AMIGA WORLD EXPO, ICD's Novia 20i, a complete, 2 Mb IDE hard drive system for the Amiga 500.

Quality not quantity

As for the rest of the proceedings, with little more than 50 exhibitors and 11,421 visitors, what this show lacked in quantity it more than made up for in quality. The majority of exhibitors were either developers of original Amiga products or system integraters, offering fully configured Amiga packages for specific applications. Many of these original hardware and software developers also introduced new products or announced the pending release of soon-to-be-completed products. The common thread of the exhibitor roster was the absence of any game developers.

Exhibits were split among two halls on adjacent levels which were readily accessible to each other via an escalator. The lower level emphasized hard drive interfaces and related hardware, while the upper level, or the Video Toaster area, consisted mainly of video processing and related technology.

The next AmigaWorld Expo is scheduled for July 26-28 in Orlando, Florida. It will be held in the Stouffer's Orlando Resort at Sea World. North American Amiga owners never cease to astound me. They are the only warm blooded creatures that I know of that fly South in the Summer and go North in the Winter. All that Video Toast they have for breakfast must be responsible.


CI-Ram Board has got to be the worlds smallest 8Mb RAM board and IDE hard drive interface for any Amiga running a 68000 microprocessor.

Expansion plans

There was no shortage of hardware expansion devices. The new offerings at this show ranged in size from the miniature to the massive.

California Access, in a booth that was reminiscent of a west-coast kitchen, was finally shipping Bodega Bay, a multi-slot expansion box for the A500. I have had the opportunity to work with a preliminary version and have found that it does work. Shipping had been delayed until FCC approval was obtained. California Access was also demonstrating a preliminary version of their *CA-650* CD ROM software driver. California Access, 130-A Knowles Dr., Los Gatos, CA 95030 ☎ 010 1 408 378 0347

Computrol Industries' CI-Ram Board has got to be the worlds smallest 8Mb RAM board and IDE hard drive interface for any Amiga with a 68000 CPU. This auto-configuring miniature RAM board is not much larger than the 68000 into whose socket it resides. The displaced 68000 plugs right into the CI-Ram. 4Mb is squeezed under the CPU itself and another 4Mb can be installed on the back of the assembly. A single XILINX programmable logic array handles both the auto-configuring and IDE interfacing functions. Preliminary pricing for the CI-Ram is $269 for a 2Mb version and $399 for a 4Mb version.Computrol Industries, 35-28 33rd Street, Astoria, NY 11106 ☎ 010 1 718 626 2400.

CSA announced a price reduction for their Mega-Midget Racer, 68030-based accelerator board, $599 for the 25 MHz version and $699 for the $33 MHz version. This was because it is using a new version of the 68030 microprocessor that lacks the hardware memory management unit. CSA also announced the CSA 40/4 Magnum Accelerator, a 68040 based accelerator for the Amiga.
Computer System Associates (CSA), 7564 Trade Street, San Diego, CA 92121 ☎ 010 1 619 566 3911.

Grapevine Group is a distributor of computer parts and accessories, including enough Commodore chips to build your own Amiga. Hardware hackers will probably want a copy of its catalogue.
Grapevine Group, 3 Chestnut Street, Suffern, NY 1090
☎ 010 1 914 357 2424.

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Audio Delights

As well as the video marvels there were plenty of new wonders for the ears too.

Oxxi/Aegis must surely win the prize for the developer with most product introductions and announcements. First off there was *Spectracolor* from Bozbosoft, the developers of *Photon Paint*, which is Aegis' entry in the HAM paint wars. Present owners of *Photon Paint* will be able to update for $49.95 plus $5 shipping ($15 for overseas). *Spectracolor* comes with a massive manual which includes over 75 pages of in-depth tutorials.

Now comes the audio part. Aegis was also selling SoundMaster, a new 8-bit stereo sound sampler which is designed to make the most of *AudioMaster* III. SoundMaster can sample sound signals at 56,000 samples per second, but you will need an accelerated Amiga to do so. The parallel port transfer speed on the stock Amiga just cannot handle 56,000 samples per second in stereo. SoundMaster has a built-in microphone, separate inputs for a stereo microphone and line level audio as well as a manual gain control.

For word processing, *TurboText*, which should be shipping within a month, can be customized to emulate other text editors. *TurboText* is expected to ship with more than 15 emulations.

Oxxi also announced ScanMaster, a 300-dpi, 24-bit colour or 256-level grey-scale flatbed scanner which can handle documents up to 8.5 x 11.7 inches. Its accompanying *ImageMaster* utility software will be able to generate CMY or CMYK colour separations. The package will cost $1999.

Oxxi also announced *P-Stat*, an interactive statistical data analysis package for the Amiga. *P-Stat* will offer more than 50 numeric and statistical functions, including matrix manipulation. It will display data in 25 different graph formats, including animated charts.

Aegis Visionary is a game language and development system with support for 65,000 rooms, 4 billion text characters, 25 IFF screens and digitized sounds, 10 animations and 10 fonts in RAM all at the same time. *Visionary* will sell for $99.95.
Oxxi/Aegis, 1339 E. 28th Avenue, Long Beach, CA 90806
☎ 010 1 213 427 1227.

Sunrize Industries was showing preliminary versions of AD1012 and AD1016, 12-bit and 16-bit stereo sampling cards for the Amiga 2000. The AD1012 will support sampling rates up to 100 KHz, the AD1016 will sample up to 48 KHz. Both boards have on-board digital signal processors (DSP) for real-time special effects.
Sunrize Industries, 2959 S. Winchester Blvd, Suite 204, Campbell, CA 95008
☎ 010 1 408 374 4962

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GVP introduced the Series II RAM Expansion Board which comes with 2Mb of factory installed RAM at $249 and is expandable to 8Mb with the addition of 1Mb SIMMs. GVP announced that it is the US distributor of *Scala*, the presentation software package from Digital Vision of Norway. Other GVP products include: Impact Series II SCSI interfaces with and without 8Mb of RAM; A3001 Upgrade Kit with 50 MHz 68030 microprocessor; Series II A500-HD+ hard drive and RAM expansion for the A500; 600Mb magneto-optical removable hard drive; Amiga LAN; and Streaming Tape. The SII-R5500 is a Ricoh 50Mb removable hard disk drive that mounts internally in the A2000's 5.25-inch drive bay or externally with GVP's Impact XC. The SII-M09200E/600 magneto-optical hard drive by Ricoh has a formatted capacity of 600Mb per cartridge and is rewritable. The Impact WT-150 is a WangTek 150Mb streaming tape backup system that comes with GVP's *Tapestore* software. The firm's new FaaastROM SCSI driver and software comes as a standard with Series II SCSI controllers.
Great Valley Products, 600 Clark Ave, King of Prussia, PA 19406
☎ 010 1 215 337 8770

ICD introduced Novia 20i, a 20 Mb hard disk drive system that fits inside an A500. This package is based on ICD's AdIDE interface, which fits into the 68000 microprocessor socket, and a 2.5 inch format IDE disk drive. The interface was first introduced last December, but the complete package, with a new name, was introduced at this show. The interface's active components are squeezed into the space between the 68000's pins. ICD set up an A500 with a Novia 20i, their Flicker Free Video adapter, an AdRAM 500 with 6 Mb RAM, and an AdSpeed 14.3 MHz accelerator. The system worked, although the height of the AdSpeed and the AdIDE in the 68000 socket meant that the Amiga's case could not be closed.
ICD, 1220 Rock, Rockford, IL 61101
☎ 010 1 815 968 2228

Interactive Video Systems had an impressive demonstration: a breath taking segment from *Back to the Future III*. The high-resolution, full-colour video was generated by a Digital Creations DCTV. The video and 16-bit, two-channel audio, were pulled off the hard drive at 1.7Mb per second by IVS' new Grand Slam card. This is a Trumpcard Professional with two 50 pin SCSI connectors, room for 8Mb of RAM and a parallel port on a half length A2000 expansion card. IVS, 7245 Garden Grove, Blvd, Suite E, Garden Grove, CA 92641
☎ 010 1 714 890 7040.

Memory Expansion Systems *(Yowza! Home grown talent – Ed)* is looking for a US distributor of its Cortex line of memory expansion products. Shown were an 8Mb RAM expansion for the A1000/A500 and a 512K RAM expansion for the A500.
Memory Expansion Systems, 46 Fenwick Street, Liverpool L2 7ND
☎ 091 236 0480.

Supra introduced SupraRAM 500RX, a 0.5 to 8Mb external RAM expansion unit for the Amiga 500 with an expansion bus pass through. Supra also expanded its modem line with the SupraModem 2400 Plus, 2400zi Plus and 2400 MNP. The SupraDrive floppy disk drive now features track zero write inhibited virus protection.
Supra, 1133 Commercial Way, Albany, OR 97321 ☎ 010 1 503 967-907

World of Amiga

SHOW REPORT

Is New York a big enough town to host not one, but two major Amiga shows less than a month apart? And which show would come out on top? The answer to the first question is a qualified yes. The answer to the second is a qualified neither. Now that I have that bit of ambiguity out of the way, let's go on with the show.

April showers

World of Amiga took place on April 5, 6 and 7 – less than three weeks after the reasonably successful Amiga World Expo. The similarities in the show names were enough to confuse the uninitiated as even I found myself struggling through occasional tongue fumbles. The Hunter Group, whose World of Commodore shows reign supreme in Toronto, has been less than successful when they came up against AmiExpo in the past.

This time they certainly managed to hold their own. Going by the body count, attendance for the first two days exceeded the entire turnout for the first show. Although the crowds on the closing Sunday were a bit thin, all of the exhibitors that I queried were reasonably satisfied. The official attendance figure is 17,256 – obviously misguided souls who chose to spend at least part of an 80+ degree New York weekend indoors.

World of Amiga took place in the New York Passenger Ship Terminal which is located by the Hudson River on Manhattan's West side. The Terminal provides spacious show accommodation, with all of the exhibits and seminar rooms on a single level. The placement of the massive Commodore booth, along with the lecture auditoriums, at the rear of the exhibit helped ensure that all of the attendees would pass at least once down the twin aisles.

If I were to assign a single theme to this World of Amiga it would have to be Commodore Dynamic Total Vision or CDTV. Someone must have been up all night when they figured out how to get CD from compact disc and TV from television into the same acronym without calling it either. There is no doubt in my mind that the public will end up calling this baby compact disk television and I can't imagine that Commodore will mind one little bit.

More to CDTV

CDTV is no more an Amiga 500 in a box with CD-ROM than an Amiga 2000 is an Amiga 500 in a box with an expansion chassis. CDTV has 1Mb RAM, 512K ROM with Kickstart 1.3. Note that this is double the capacity of the typical 1.3 ROM which indicates that the extra 0.25Mb is responsible for CD-ROM functions. Unlike the A500, all CDTV's built-in memory is chip RAM, ie useable for graphics.

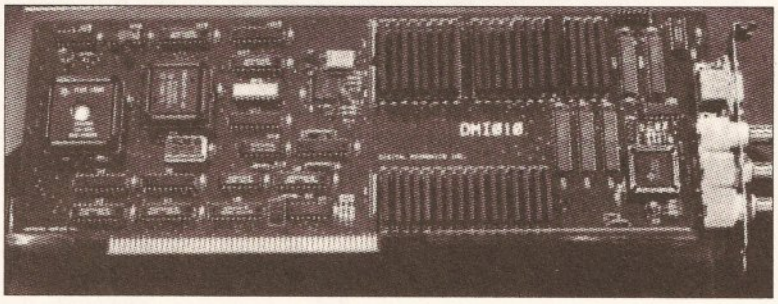
I was looking forward to an early afternoon interview with Nolan Bushnell and Gail Wellington. However, Mr Bushnell suddenly developed a severe need to fly to Tokyo. I trust that he recovers from this affliction. Fortunately Ms Wellington was available during a brief break between CDTV demonstrations.

Up for grabs

This World of Amiga show was the first time that CDTV was offered for sale to the public. With a list price of $999 and Commodore looking over their shoulders, every dealer at the show was selling the units at a moderately discounted $895.

Several CDTV software titles were available, including Merit Software's *Classic Board Games* and *All Dogs Go to Heaven* at $49.95 each, Tiger Media's *The Case of the Cautious Condor* at $49.95, Applied Optical Media's *World Vista Atlas* at $79.95, Xiphias' *The American Heritage Illustrated Encyclopedic Dictionary* at $69.95, and CDTV Publishing's *The New Grolier Electronic Encyclopedia* at $395. Overall, about 50 titles are expected to become available during the CDTV's introductory phase which starts now and concludes this autumn. The official *CDTV Catalogue of Titles*, Volume 1, lists 52 titles for release by this autumn. The majority of the CDTV software will cost somewhere between $50 and $80.

The official word is that CDTV "will be available at quality audio/video retail chains in Los Angeles, San Jose, San Francisco,



Digital Micronics' DMI010, 1024x800-pixel 8-bit display board. Tasty.

Best Of The Rest

Activa was showing a pre-release version of *Real3D* 1.3, which is a solid modelling, ray tracing and animation program for the Amiga. Activa plans to offer three levels of *Real3D:* a beginners version for $100-$150, a professional version for $300-$400 and a turbo version for approximately $500; although I suspect that prices will be subject to change without notice. *(For comparison, the UK prices for the same three versions are roughly £115, £345 and £435, which is not exactly favourable when you consider that it's a European-originated program – Ed)*
Activa International, Keienbergweg 95, 1101 GE Amsterdam, Holland
☎ 010 31 20 97 00 35.

Hyper Media Concepts was not at the show. However, I spotted a copy of their *Fred Fish Collection* Volume 1.1 on CD-ROM, which covers disks 1–415, in the California Access booth. This $69.95 collection duplicates the original disk format of the Fred Fish library. Updates are expected to be issued every four months at $29.95.
Hyper Media Concepts, P.O. Box 85303, Racine, WI 53408
☎ 010 1 414 632 3766.

Soft-Logik was showing *PageStream* 2.1, *PageStream Forms*, a collection of business form templates for $39.95, and the *PageStream Fonts* collection. Soft-Logik also announced two new products for shipment later this year. *Art Expression* will be an easy-to-use structured drawing program which will be able to import and modify Adobe EPS, IFF DR2D and *Aegis Draw* structured graphic files. *Hotlinks* is a proposed data sharing program which will support the sharing of text and graphic files between programs. *BME* is a simple bit map editing program and *PageLiner* is a fast text editor; both were designed for use with *HotLinks* and *PageStream*.
Soft-Logik Publishing, 11131 F South Towne Sq., St. Louis, MO 63123
☎ 010 1 314 894 8608

Sacramento and Chicago on April 19 followed by New York, Boston, Minneapolis, Atlanta, Dallas and Denver in May." *(and in the UK in May as well I should add – Ed)*

In a related development, Xetec was showing their CD-ROM drives for the Amiga. If you bought a Xetec CD-ROM at the show, the package included *Fish and More* volume 1 (Fish disks 1-370), *Fish and More* volume 2 (Fish disks 371-470), and Merit Software's *Classic Board Games* and *All Dogs Go to Heaven* which both run on the Xetec CD-ROM. Xetec conducted a bit of surreptitious over-the-counter research at the show. In addition to the above titles,it has determined that *The Case of the Cautious Condor*, *World Vista Atlas* and the *American Heritage Encyclopedia* will all run on their CD-ROM reader. Since developers tend to stay with a known format for their products it is more than likely that subsequent issues from the same developers will work with the Xetec CD-ROM reader as well.



Prototype of an Amiga 500 version of the CDTV was spotted in the Commodore booth. Note that the interface is via the expansion port.

Fish goes optical

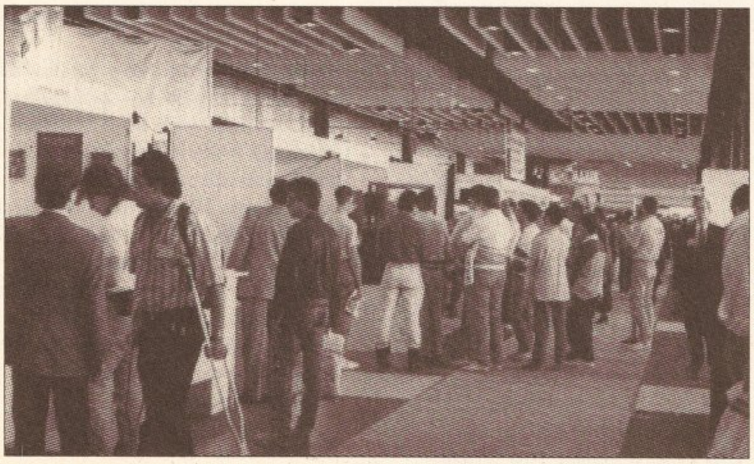
HyperMedia Concepts, which was right down the aisle from the Xetec booth, was offering its 410 disk *Fred Fish Collection* on CD ROM for $69.95. Updates, whenever every 50 new disks are added to the collection, will be available to registered users for $29.95. HyperMedia was also offering Canadian Prototype Replicas' *CDROM-FS*, $49.95, a CD ROM file system which lets you use a variety of third party CD ROM readers with your Amiga's SCSI host adapters. Check with HyperMedia for the list of currently supported CD ROM readers.

Is floppy storage inadequate for you? Are you running out of space on your hard drive? Take a look at what Digital Micronics, a newcomer to the Amiga community, has to offer. Its 3.5 inch Floptical Magneto-Optical disk drive provides 20 Mb of data storage on a floppy disk. These read/writeable floppy disks resemble conventional 3.5 inch floppies, but the storage media combines magnetic and CD technology. The internal version of the drive sells for $595, the external version lists for $795. Blank 20 Mb disks are $20 each.

Digital Micronics was also showing its high-resolution, plug-in display cards for the Amiga 2000/3000 computers. The DMI020, $1995, offers a 1280x1024 pixel, 24-bitplane display with over 16-million. The DMI010, $1095, offers a 1024x800-pixel, eight-bitplane display with up to 256 colours out of the same 16-million colour palette on-screen at once. If you need a suitable monitor on which to view all those colours and pixels, the DMI19HI, $2995, is a 19-inch, 1280x1024, multi-sync colour monitor. There is also the DMI13HI, $699, a 13-inch 1024x800 multi-sync colour monitor.

ReadySoft had a prototype A-Max II Plus, the Macintosh emulator on an Amiga plug-in-card. It will have a built-in AppleTalk and MIDI port and be able to use Macintosh-format disks with Amiga drives.

I'm signing off from New York for now. I'll be back with more exciting news from the States soon. AS



Now doesn't that look like a much more civilised and spacious setting than most UK shows? Air conditioned too, of course.

Best of the rest

Beta Unlimited, which failed to appear at last year's show, promoted AudioLink, a 16-bit stereo sound sampler for the Amiga. After trying for a software solution, Beta Unlimited went back to the drawing board to devise a stand alone box that will be able to do all of the things via hardware that could not be done with software. The boards are complete; delivery of their all-metal enclosures is currently holding up shipment.
Beta Unlimited, 87 Summit Street, Brooklyn, NY 11231 ☎ 010 1 718 852 8646

Concise Logic was demonstrating Scannery 1.1, an Amiga software and hardware interface package for the HP ScanJet family of fullpage flatbed scanners. Scannery V1.1 features 256 grey scale images, 12 to 1500 dpi resolutions and a full range of brightness and contrast settings. Concise Logic, 36 Tamarack Ave, Suite 315, Danbury, CT 06811 ☎ 010 1 203 746 6739

Free Spirit was showing *Ami..Alignment System*, *Doctor Ami..*, *Sterling Service BBS* and its line of children's programs. It also previewed the CDTV version of *Barney Bear Goes to School* and the new *Barney Bear Goes Camping*. Free Spirit Software, PO Box 128, 58 Noble St, Kutztown, PA 19530 ☎ 010 1 215 683 5609.

Interactive Video Systems again gathered crowds with its collection of demo films on hard disk, including the breath taking segment from Back to the Future III. IVS, 7245 Garden Grove, Blvd, Suite E, Garden Grove, CA 92641 ☎ 010 1 714 890 7040.

New Horizons was showing its *ProWrite* and *QuickWrite* word processors and a pre-release version of *DesignWorks*, formerly *Graphic Designer*, a structured drawing program for the Amiga.
New Horizons Software, 206 Wild basin Rd, Austin, TX 78746
☎ 010 1 512 328 6650.

Octree was showing its line of *Caligari* programs, 3D conceptual design and animation software for the Amiga. *Caligari Broadcast* 2.0 was announced at the show. Versions range in price from $249 for the consumer version to $3,495 for *Caligari Broadcast* 2.0
Octree Software, 311 West 43rd St, Suite 904, New York, NY 10036
☎ 010 1 212 262 3116.

Pelican Press, the $99.95 "lighthearted publishing program" was selling at the show. *Pelican Press* lets you create giant posters, colourful banners, cards, calendars and so on.
Pelican Software, 768 Farmington Avenue, Farmington CT 06032
☎ 010 1 203 674 8221.

American Software Distributors was showing *Superbase Professional* 4, the high end relational database program. *Superbase Professional* 4, which has been available for some time for the PC, is now available for the Amiga.
Precision Software, 8404 Sterling Street, Irving, TX 75063 ☎ 010 1 214 929 4888.

ReadySoft announced the CDTV version of *Wrath of the Demon*. ReadySoft was also showing a prototype of A-Max II Plus, the Macintosh emulator on a plug-in-card for the Amiga 2000.
ReadySoft, 30 Wertheim Ct #2, Richmond Hill, Ontario, Canada L4B 1B9
☎ 010 1 416 731 4175.

TTR Development was showing a wide variety of products including the 1.3 Gb 'DAT' SCSI Tape system, the Sapphire 68020/68881 accelerator, *MRBackup Professional* which includes an ARexx interface as well as support for SCSI streaming tape devices, and *Workbench Management System* which lets you launch applications with the click of a button. New products from TTR included *RXTools*, a complete development system for Arexx and the Amiga with emphasis on an object oriented user interface builder; and *Teachers Toolkit*, a complete lesson planner and gradebook system.
TTR Development, 6701, Sebold Rd, Suite 220, Madison, WI 53719

Very Vivid's booth was a real show stopper with its video wall display and the Mandala Virtual Reality System. The high end, fully integrated Mandala system sells for $20,000. Very Vivid announced the commercial version of the *Mandala Virtual World Authoring System*, a $495 software package which lets you create your own Mandala applications. You have to supply your own hardware.
Very Vivid, PO Box 127, Station B, Toronto, Ontario, Canada M5T 2T3
☎ 010 1 416 686 7850

Vortex was showing ATonce, the PC-AT emulator for the Amiga 500 ($300) and Amiga 2000 ($500) computers. The Amiga 500 version, which can also be used in the 2000, plugs directly into the 68000 microprocessor socket and contains its own 68000 and 80286 CPUs. The Amiga 2000 version is a plug-in-card which fits into one of the expansion slots. The latest release runs as a task on the Amiga and emulates VGA monochrome as well as EGA colour graphics. *(We will be looking at the ATonce board in the Business pages next issue – Ed)* Vortex Computer Systems GmbH, Falterstrabe 51-53, D-7101 Flein bei Heilbronn, 07131/5972-0

Xetec was showing its CDx-650 CD-ROM system, $599 internal, $699 external, the MOx-600, re-writable 600 Mb, Ricoh Magneto-Optical drive, $3600, and its series of FastTrak SCSI host adapters for the A500/1000/2000 computers. Purchasers of the CDx-650 can also buy a SCSI host adapter for the A500/1000 for only $100 or for the A2000 for only $50. A FastCard Plus, which can accommodate up to 8Mb RAM is only $129 with the purchase of a CDx-650. Hard drive is not included. Xetec was also offering *Fish & More* Volume II which includes Fred Fish disks 371 through 470 in both compressed and file sorted format. A file index listing is included with the collection.

TALKING SHOP



Paying scant regard to his own safety, Bob Wade dives head first into the huge pile of mail lurking menacingly in the corner of the office and emerges triumphant with the following missives which earn their scribes £5. If you want to join them on these pages then write something excruciatingly interesting and send it to: Talking Shop, Amiga Shopper, 30 Monmouth Street, Bath BA1 2BW

Hex education

Please ask Jeff Walker not to proliferate the idea that machine code and assembler are the same thing, as he did in the article *ABC of programming*. As I'm sure he must be aware they are definitely NOT the same thing. As one who spent 25 years in the computer industry at the hardware level, I can assure you that machine code which, as Jeff says, is the lowest level, is entirely in Binary or Hex code. You can program at this level but it requires a very intimate knowledge of the processor used, and is difficult to alter when required – it is only practical for a few instructions. The next level up is assembler which uses mnemonics for the hex codes and labels so that you can jump about easily. After all, if they were the same thing you wouldn't need the assembler program at all for the assembler language, as indeed you don't for machine code.

R Warrington
Hemel Hempstead
Herts

A mere slip of the keys by Jeff who is of course well aware of the difference – as should everyone else be after reading our piece on programming languages on page 85.

Killer on the loose

Although there are numerous virus killers available both commercially and on the Public Domain, it is often the newcomers to the computer field who only realise they have obtained a virus when it is too late and half their disk collection is mysteriously wiped.

These people aren't ignorant, they just do not know how to prevent a virus due to lack of experience and the fact that some believe "I'll be careful, I'll never get one". The sad fact is that viruses are so numerous with 16-bit computers that almost everyone has – or will – unwittingly collect one on an affected disk.

In an effort to at least combat the fools who create these viruses, I think hardware and software manufacturers should do more to aid the consumer.

One way is to include a virus killer freely with all new Amiga computers sold. If Commodore can do this with 1Mb expansions, why can't they do the same with a virus killer?

S N Hardy
Sheffield

An excellent idea which all hardware manufacturers, including those who make peripherals, should consider. The only problem with it is that because viruses are constantly updated the killers have to be as well. If they are bundled with things it might lure the user into a false sense of security. So, yes it should be done, but along with a registration form so that users get continuous updates of the killer concerned.

Never too old

There must be many readers like me 'of a certain age' whose maths education finished a very long time ago and who have struggled with their 'friendly' Amiga. We get a tremendous amount of pleasure from our efforts but, because of our lack of background experience with computers, frequently experience difficulties. Whilst I do not suggest that you should have an Old Codgers page (we have our pride) will you try to keep the language as simple as possible please. It is generally accepted that Manuals are written for those that don't need them, so I do hope that any tutorials etc that you might run will be kept as simple as possible.

D W Joslin
Bridgwater
Somerset

It has been pointed out that despite the beginner's and jargon busting boxes that we are a bit too techie at times, so we will try to be more aware of it in the future. However, we will continue to try to cater for experts as well as new users, so expect there to be some articles that you won't understand – it's unavoidable when covering this many topics in the mag. We will try to write them all in English though.

Environmental disaster

Having just received the preview copy of your new magazine with the April *Amiga Format* I am delighted to say I have spotted the deliberate mistake on the cover! (A cup of coffee near the A500 – ed) I wonder, can I claim the prize? Quote *Amiga Format* issue 18, page 239 under heading 'Avoiding Disaster' NEVER eat or drink near your computer!!! Will you be including a mistake every month?!!

R V French
Chichester
West Sussex

I am non too happy about the connection of the A590 – I am looking at one as I write this and I am sure that it is closer and more parallel to the CPU.

A Irving
South Croydon
Surrey

It's a fair cop guv. The A590 was not actually plugged in or turned on. No real reason why, it was just easier for the photo shoot to have it unplugged. No excuses for the coffee, but it was damn fine coffee until it got cold because the photo shoot took three hours.

Death by A1000 cuts

As a long-time A1000 owner, may I suggest a regular section on the venerable beast? Would it be viable? I see ads for rejuvenator boards and so on in US magazines, but nothing at all in the rags this side of the pond. Is US hardware compatible with UK gear? And so on. Maybe there's a lot of us proud but forgotten A1000-ites out here – and after all (sound of violins rising in background) we were committed to things Amiga before all these spotty Herberts with their poxy A500s......rant rave....foams at mouth....collapses in gibbering heap as men in white coats arrive etcetera.

Tony Barnes
Director, Fairwater Films Ltd
Cardiff, Wales

I don't want to have an A1000 section because it's basically compatible with all the other Amigas and therefore many things in AS should be of relevance. However, I do want to cover things that are specific to the A1000, because there are still some around (no idea how many though). In fact a review of a rejuvenator board is on its way in the next couple of issues.

A load of Toshiba

Having just read your excellent review of hard-drives for the Amiga, I

am shocked to find that my 2090A/2094 40Mb Toshiba MK134 FA hard-disk is the slowest drive available, scoring a mere 36/100.

I was not aware of this when I purchased my B2000 in March '90, I simply asked for a 40Mb hard-disk to be fitted.

However, after the initial shock, I checked your figure for loading *DPaint* III, (9 secs), my copy loads in 3 secs.

As you point out, the disk comes pre-configured:

Small Boot partition 0.89Mb
DH0: (standard file system).
Workbench partition 2.6Mb
FH0: (FFS).
Work partition 39.9Mb
FH1: (FFS).

The extra storage being due to the FFS.

I agree that the documentation is confusing, consisting of a 2090 manual and a small "additions" manual. So confusing that when booting the system, the configuration details (preferences), are taken from Devs:system-configuration file on the Boot partition, the startup sequence then proceeds to re-assign everything to the Workbench partition. Subsequent changes to preferences will NOT be used when re-booting!

The simplest answer is not to re-assign Devs: in the startup-sequence, keeping only the minimum requirements in the Boot version, ie. GB keymap, current printer driver, necessary device drivers and config file.

I should also like to point out that the current card/drive combination is 2091/2094, which will autoboot from a FFS partition. The advert on the facing page of your final summary indicates this and also shows the price to be £499, not £1209.80p as you quote.
NB: The 2090A card will support two internal drives ST506/SCSI and up to seven SCSI drives in total.

B E Matthews
Walsall
West Midlands

Over to tech ed Cliff for an explanation...
I must say I was shocked myself at the Commodore drive's speed after testing it. No doubt it performs better in everyday use, with most files being kept in one of the Fast File System partitions. I presume that's where you keep your copy of Deluxe Paint, and why it loaded in three seconds instead of nine as it did for me.

The decision to carry out all the tests on a boot partition was taken before I had looked at the Commodore drive - principally because Commodore failed to supply one in time for the review, so I was left to find what I could. Unfortunately, this turned out to be the older 2090A/2094. As far as the price goes, that was the price quoted by Commodore.

Bob adds... It has been brought to our attention that this was not the most up to date version of Commodore's internal hard drive.

Commodore was unable to supply us with one in time for the review, and still haven't, making testing it rather difficult. We will cover it just as soon as they supply us with one.

Are ads bad?

Even though your magazine's called *Amiga Shopper*, I think you use too many ads instead of using more advice, reviews etc. If you are from the makers of *Amiga Format*, or the buyer/reader buys other magazines, then surely all your ads will also be in the other magazines. I don't mean to sound rude, but I think too many ads are/will be a disadvantage to you.

L Stairs
Hendon
London

There are three crucial points to bear in mind here
1) The revenue received from the ads is a major contributing factor to being able to price the magazine as lowly as we do.
2) The ads provide a very important service to people looking for bargains and the best hardware and software to buy – we would be doing you a disservice by not having them.
3) Having more ads does not mean having less editorial pages. The reality is that the more ads we have the more editorial we can afford to run.

Those are the facts of life in publishing – so enjoy those ads, they're actually doing you a favour.

Amiga with the blues

Why is it that the Atari ST, (ST stands for Single Tasking) is so extremely popular with music, especially with MIDI users, while there's such a great machine on the market that beats the ST on all fronts? Better said, why is it that the software companies are so indolent on converting, or better, rewriting the good software packages that exist on the ST. Look at *Cubase*, which is a great program, or C-Lab's programs, those are the packages we need on the Big A. I don't get it, it just can't be possible, that I'm the only one having this MIDI nightmare? Wouldn't it be good for the market if the Amiga could compete with the so-named number one for MIDI (I wash my mouth after saying this).

Think of what you could do with *Cubase* 2.0 on the multitasking machine, which even has an incredibly good soundchip built in. So what if the ST has a built-in MIDI interface, for a few pounds you're the proud owner of an interface for the Amiga. And be honest, *Music-X* alone is not enough, certainly not when you think of how little the offer of different protocols for this package is. I hoped this would turn the other way round, with the release of Steinberg's *Pro-24*, which is a good step in the right direction, but it's still very quiet in the Amiga MIDI market. But not only the software-market is mainly based on the ST. What about the Studio-audio market, that is only producing equipment for the ST and the Mac? This all could change, if only the software houses would consider the Amiga worth programming on!

Can you tell me, what's the bottle-neck, and are there going to be any changes on this front, and do you know if there's a plan to convert *Cubase* to the machine which I totally support, namely the big Amiga. Try to wake people out of their MIDI nightmare with some good news.

Rob Swart
Lelystad
Holland

This same subject comes up on the Answers pages and I'm afraid there is no easy answer. The ST and Mac have a strong foothold in the studios and with so many musicians that for the Amiga to claw its way back into contention it either needs a corporate push by Commodore into the music scene or a creeping invasion via the graphic side of things where musicians start using the Amiga for video work and then get drawn into using it for MIDI work as well. One of the best ways is just to keep telling everyone how good the Amiga is for music – eventually people will start to get the message.

Question time

I have thoroughly enjoyed reading your magazine but there are a few points I would like to ask about.

1. Will you be putting a coverdisk on your magazine?
2. Will you be reviewing any games?
3. Why not advertise some PD companies?
4. Why not review more PD software?
5. Will you be starting a C or Basic tutorial or course for beginners?

Michael Auton and Peter Reay
Whickham
Newcastle upon Tyne

1) No, it would put the price up too much.
2) No, nyet, nein, non, absolutely not. Have I made myself clear? If it's games you want then check out our sister magazines Amiga Format and Amiga Power, they've got lots of them – this is a games exclusion zone.
3) We do – have a look at the back of the mag.
4) How much is more? How long is a piece of string? Seriously, we will have at least five pages of PD every month.
5) We will be doing tutorials for all levels of knowledge, but we can't do them all at once. Stay with us and you will be catered for.



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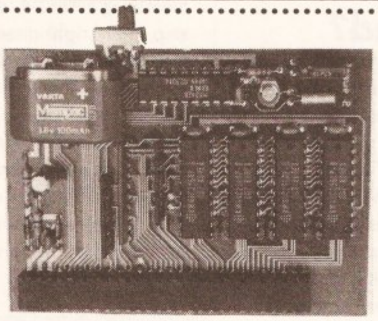
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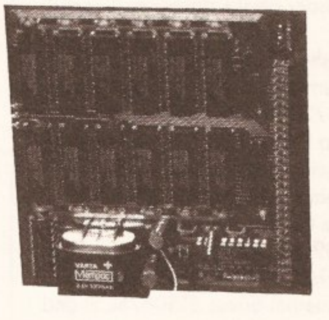
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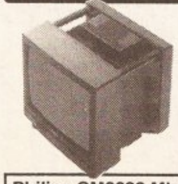
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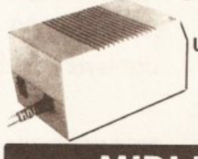
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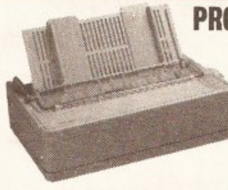
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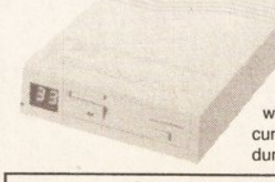
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Q

Dead drive blues

My problem is this: when accessing df1: you can hear it drop the disk, so to speak. That's to say it's as though the drive has stopped and started again within a split second and occasionally a requester appears saying you MUST replace volume whatever in unit one. Occasionally it has destroyed the validator on a disk. Now a friend of mine says that the darn thing 'aint indexing correctly. Any ideas? Is it worth having it repaired or would the money be better spent on investing in a new drive (thus giving me a fresh warranty – mine's history by the way)? A rough guide to the cost of repair would be much appreciated.

Dave Brandwood
Oldham
Lancs

A

If I understand your problem correctly, the drive peg has probably worn out – it's a little spring-loaded pin which engages in a slot in the disk hub to drive it. However, it could be any one of a number of other things. Drives are very rarely repaired – the best option is to replace them. See the *Amiga Shopper* sneak preview, available with back issue no 21 of *Amiga Format* (copies of which are £3.85 – see the back issue order form on page 111) for my review of suitable models. ***MS***

Q

Compatibility city

I recently had a problem of incompatibility. The *Puggs in Space* PD demo wouldn't run on my Amiga but did so happily on others. Someone suggested that my machine may be of German construction and therefore may contain some 'new' chips which Puggs doesn't like.

Can you shed any more light on incompatibility problems, of which I'm sure there are many, and am I to be plagued for ever with this?

If the worst that happens is that I may not be able to run the odd demo, then I can live with it. However, if it might mean that should I splash out for some fancy commercial business software only to find it crashes, well then I'm very concerned.

H Alan Bowen
Loanhead
Midlothian

A

The Amiga is one of the most compatible machines I know of. However, since its design is in constant flux, it is quite possible you have any one of a number of variations. For instance, I came across one recently that apparently had a Fatter Agnus fitted to an older issue board. In effect, the extra 0.5Mb RAM was mapped as conventional FAST RAM – not CHIP as you might expect. This affects demo programmers worst because they 'hit the metal' directly and have less access to loads of different machine variations. A single byte wrong can make all the difference between a demo that works and one that doesn't. ***MS***

Q

Double buffered

When I am using *Deluxe Paint* III I have to wait until the printer is finished before I am able to start drawing again. Apart from buying a printer buffer, the cheapest of which I have found is £75, is there any way I can set aside an area of memory and send the printer information there before it goes to the printer so that I can carry on using *Deluxe Paint,* or is there some PD software that I can use? I have an A500 and an A590 hard drive with a total of 2Mb and an Epson LX800 printer. Also I have *Platinum Works!* and although it runs fine without the hard drive connected, I have followed the manual for installing it on HD, but as soon as I try to run it with the hard drive or from hard drive it ends up crashing the system.

D Armstrong
Gosforth
Northumberland

A

I doubt a printer buffer would be much use because of the way *DPaint* and the Amiga work. When I tested it, even a simple picture – dumped through a 9-pin printer driver – resulted in almost 100K of information being sent. This varies dramatically with the number of colours in use. Not to mention your printer setup for density, scaling and so on. There are two possible answers to this:

The first is to use a program called CMD supplied with Workbench which allows you to buffer printer output to a file. CMD is not that easy to use so I have written a couple of short AmigaDOS programs (scripts) to get the best from it. They should start filtering into the Public Domain libraries soon.

The second option is easier, but requires more memory. You already have 2Mb, so you should be able to run two copies of *DPaint* in the machine at once – multi-tasking them. Then proceed as follows:

- Create your drawing.
- Use the screen's depth gadgets to push the first *DPaint* out of the way. Find the other copy of *DPaint* and click in its screen – as if by magic, the drawing appears!
- Select Print to print the picture.
- While the second copy of *DPaint* is busily printing away you can return to the first one and carry on drawing.
- This feature only works with *DPaint* II. With *DPaint* III, you have to save the picture in one copy of *DPaint* III, load it into the second one and then start printing.

The problem with *Platinum Works!* is not quite as easy to fathom. It could be the Install program does not install everything. Have you tried booting from the hard drive and running the *Works!* from floppy disk? If this works, then the most likely cause is *Platinum Works!* is not installing itself correctly. If this technique fails, then the fault is endemic with *Works!* ***MS***

Q

Cold-boot shy

My Amiga with A590 attached is sometimes reluctant to autoboot from cold. The system request 'Not a DOS disk in Unit 0' appears. The solution is then to boot from a WorkBench floppy which negates one of the advantages of owning an A590. This is an intermittent fault, and only happens sometimes on the first boot-up from cold. Commodore advised me to low-level format the disk, which, needless to say, had no effect whatsoever. The unit has also been returned to Commodore under warranty. Again this has made no difference. Can you help?

Peter Whiting
High Wycombe
Bucks

A

This problem can manifest itself in a number of ways and the A590 may not necessarily be the culprit. Intermittent faults like this one are the scourge of repairmen too, which is probably why they checked it and sent it back working (assuming that's what happened). Oddly enough, this problem can be caused by a faulty external drive which is overloading the electronics controlling df0: and foxing the Amiga into thinking it contains a disk. If you have any external drives try switching off, disconnecting them and switching on again. It may help.

The other possibility is that the

continued on page 18

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That's the task we have set ourselves in giving you the best possible support for your Amiga. We are confident that our experts can cope with anything you can throw at them. If they don't already know the answer to your problem, they will find it out. Read on for some of the typical, and obscure, problems you may encounter when trying to get the most out of your Amiga.

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We also cannot enter into personal correspondence – all enquiries will be dealt with in the pages of the magazine. This does mean a delay in solving your problem, but we will come up with an answer for you. You'll just have to be a little patient and wait for it to appear in print.

Send your questions to: Amiga Answers, *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW. Fax: 0225 446019.

The *Amiga Answers* panel consists of all three consultant editors – Jeff Walker, Mark Smiddy and Phil South – and of course resident technical editor Cliff Ramshaw. We will also be calling on the services of all our other contributors, so you won't be able to catch us napping on any subject. Each panelist will be dealing with queries in their own specialist area and it would help us greatly if, when writing, you label your query envelope with the name of the expert who can solve your particular problem. Below is a list of their areas of expertise. It's a list that we will add to and update every month so you will know who to write to about any subjects not mentioned here.

Gary Whiteley – Video.
Stuart Russell – Comms, CAD.
Paul Overaa – programming, music.
Mick Draycott – hardware, programming, MIDI.
Jeff Walker – desktop publishing, programming.
Mark Smiddy – AmigaDOS, business, CDTV, hardware projects, drives.
Phil South – public domain, graphics, AMOS.
Bob Wade – American football.
Cliff Ramshaw – anything else.

If you think you have been ignored...

Don't panic, there could be several reasons why your question has not appeared this month:

- It did not reach us in time to be included this issue.
- The answer to your question is given as part of the answer to another published this month.
- You have not given us sufficient information to answer your question fully.

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drive is not validating correctly when it is switched on. I have never managed to nail a good reason for this but there are two main cures for this symptom.

- Always PARK the hard drive *before* switching off and get into the habit. The PARK utility should have been supplied with your system.
- Shut down safely. That is to say, before switching off, make sure *all* disk activity has stopped. Watch the green busy light. When it goes out, wait at least a second, run PARK and switch off at the Amiga's PSU immediately. ***MS***

Q

Fancy words

I have a Centronics GLP II printer which copes admirably with normal draft or NLQ output. I would like to use some of the enhanced features such as underlining, bold, etc, as well as other fonts.

Can you advise me if this is possible with the Centronics and if so, what are the correct DIP switch settings? Also can you suggest a good PD WP?

R Meacham
Tamworth
Staffs

A

Any word processor worth its salt should support 'enhanced' features. This is the whole idea of having a printer driver – the software uses a standard code for underlining, bold and so on, and the driver sends the correct code to the printer. The cheapest WP available came free with your system – *NotePad.*

Two word processors available from public domain libraries spring to mind. *TextPlus* has received mixed reviews, from good to awful. So I suppose it's down to who you believe. The other is called *Word Wright* – my copy is dated 1986, but it came free with a commercial package. Although it lacks a spelling checker, it has some sophisticated options, such as outlining, and is well worth trying out. You can get a copy from AmigaNuts on (0703) 785680, disk number 272. ***MS***

Q

Of pins and PCBs

I own an A500 and would like to use an A2000 expansion card. On close examination of a picture of the A2000 with the top removed I found that the progression from 86 pins to 100 pins (on the expansion slots) is made via half a dozen IC's and their associated discrete components. Could you possibly supply me with a schematic/circuit diagram of this section with a component list, enabling me to make a small extender PCB whereby I can attach the one and only A2000 card I require.

Another bit of information that would be appreciated is a pin out diagram of the 100-pin slot and also can you tell me how to read the pinout diagram of the 86-pin bus as given in appendix F, page 9 in the back of the A500 user manual, ie which is pin 1 as I look into the Amiga end on. Also, is P1A the top row of connections or the bottom?

Saquib Ghani
Middlesbrough
Cleveland

A

This sort of thing is best left for experts to sort out. It is not just a simple matter of extending the bus. Then there is the other consideration of powering the card. Expansion cards for the 2000 are designed for that environment and will expect to be able to draw the extra power available. Several suppliers offer solutions to this problem, already pre-built and ready to go. Bytes and Pieces have an external expansion box for this purpose, but a better alternative might be either Bodega Bay or the A1500 expansion box – not the 'new' Amiga. ***MS***

Q

Thin white line

How do I go about making up a personal Printer Driver? I want to print graphics from my Amiga on my IBM 5201-2 (QuietWriter II) printer.
By messing about with Preferences and the IBM's dip-switches I've managed to get graphics, but it leaves a nasty white bar in between each line. Any help you could give me would be appreciated.

Mat Simpson
South Woodford
London

A

Banding is a problem inherent to almost every printer this side of £2,000 and is usually due to slight inaccuracies in the paper feed mechanism. The best solution is to select 'Single sheet' from Preferences and use manual feed paper in your machine. This tip applies to most printers, not just the IBM. ***MS***

Q

Learner driver

I have an A500 with a Seikosha SL-80AI 24-pin printer. I use the EpsonQ driver from preferences which works fine for NLQ printing, but can produce ill-proportioned output from packages such as *PageSetter* and *ProWrite*. Can you tell me where I can get a custom driver for this printer? Alternatively, can you direct me to the definitive manual on writing printer drivers?

Roy Bell
New Malden
Surrey

A

Writing a printer driver is very complex and there are three options. If you really want to write your own, the definitive guide is the Addison-Wesley *ROM Kernel Reference Manual*, ISBN: 0-201-181817-8. The second is to obtain a copy of *Printer Driver Generator* – 17 Bit software's disk 173 has a version.

Or you could try contacting: Wolf Faust, Am Dorfgarten 10, W-6000 Frankfurt 50, Germany. Wolf has been developing printer drivers for some time now – he has developed one for the EpsonQ series. Wolf does charge a small fee, so send him a disk and some cash to cover his expenses. ***MS***

Q

Red rag to a bull

I have a six-month-old A500 with 0.5Mb upgrade, external drive and Epson LX80 printer.

continued on page 21



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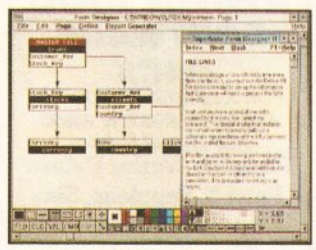
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When I first switch the computer on, the screen cycles through its normal shades of grey during self-test. After a couple of hours use, if I turn the computer off and then on again to re-boot (waiting 5 seconds in between as advised) the screen flashes red before the normal grey shades and then loads and operates as normal. If I reboot using the keys, I don't get this red flash. If the computer is switched off for a minute, then switched back on, everything is back to normal with no red flash. What causes the red flash?

Does this mean I have a problem, or need I only worry if the screen stays red? As the computer is still under warranty should I get it checked out?

Rob Fowler
Southend On Sea
Essex

A

If the screen comes up red, this indicates a hardware problem during the self-test. Since this clears itself, the problem is probably due to some charge remaining on the capacitors, either in the PSU or in the machine. Try leaving the machine off for at least 30 seconds and see if that clears it. If not, get the whole thing checked (PSU included) by a Commodore repair centre. ***MS***

Q

Drive away

When my A500 is in use by my son, gameplaying for great lengths of time, it would be nice to disable the A590 drive. Unplugging it will eventually cause wear and tear on the slide-in contacts, so I would like to be able to fit switch/s to disable the drive and fan mechanism and yet retain any extra RAM fitted in the drive.

I need to know which leads or contacts need to be switched. I could either extend the wires out of the drive or possibly fit an interface between computer and drive with switch/s on top. Who knows, it may even be possible to have a thru socket so I can buy an Action Replay.

I have, to a lesser extent, eased the problem by extending the autobooting dip switch to an external switch (warranty now void) but it would be better to have silence. Anyway, hopefully you can understand my request and I look forward to your reply in the form of a tested solution.

TN Wells
Kesgrave
Ipswich

A

One of the reasons for having the fan is to cool the chips – RAM, controller, etc – so, although possible, it would not be wise to disable it. A better solution came from my colleague Jolyon Ralph. He suggests replacing the hard drive with a 40Mb low-power consumption model and removing the fan altogether. Suitable units are available from Almathera Systems on 081-683 6418. ***MS***

Q

Remember the PC?

I was thinking of buying a PC emulator, preferably the KCS board. I understand it comes with 1.5Mb in total, with 1Mb for the Amiga and around 704Kb in PC mode. If I buy the Cortex 8Mb expansion, does it mean I also get more memory available in PC mode?

Anoop Sharma
Thornton Heath
Croydon

A

The Powerboard is limited by MS-DOS which can only access 640K. However, drivers are included for LIM EMS (Lotus-Intel-Microsoft Extended Memory System) and these should allow some programs to access the extra memory. This only applies to external, auto-configuring cards fixed to the Amiga 500's expansion port. And, as with my previous answer, check out Mark Smiddy's *Down to business* column on page 67 for a review of the Powerboard. ***MS***

Q

Back to boot

I've seen an article on converting an executable module into a bootblock, but none on doing the opposite, ie converting a bootblock to a CLI command. It seems logical enough to assume that it is possible. The reason for this is that there are some useful virus detectors I would like to convert into CLI commands and put in the startup-sequence of my hard drive.

My internal floppy drive has packed up. Will any old 3.5" drive do (without case & power supply) as long as the stepping rate is correct and the power consumption is low? (And ideally what should they be for the Amiga?). If this isn't the case could you recommend a firm that sells replacement internal drives for the Amiga?

Jason Brown

A

You can convert the bootblock into code using a little program called XBoot. However, it is highly unlikely such programs would work from the CLI because they are designed to operate before the machine actually 'wakes up'.

Several suppliers can sell you a replacement internal drive. Power Computing (0234) 273000 will kit you out for under 50 quid. It is not possible to use 'any old' 3.5" drive because the eject button and casing are designed differently. ***MS***

Q

Fat, bad Agnus

I have recently had the Fatter Agnus chip installed in my Revision 5 A500. I also have an A590 hard drive with the full 2Mb installed. Since the fatter Agnus was installed I have noticed a strange behaviour of the mouse pointer. As I drag the mouse into the lower portion of the screen – the PAL area – the pointer splits into two separate pointers. The faster the mouse is dragged into this area, the further the pointers separate. Also, if the mouse pointer changes into another sprite, say the 'ZZ' cloud, the duplicate pointer remains fixed on the screen until the moveable 'ZZ' cloud disappears. The problem only occurs with the WorkBench pointer, not with software that uses its own custom pointer, such as *DPaint* III. Also, the problem only occurs when the A590 is attached to the computer. Perhaps you have a solution or know of an upgraded Setpatch command or PD software to cure it?

Steve Clarke
Fareham
Hants

A

This particular bug, which occurs as soon as you start installing fast memory, is something that Commodore is very well aware of.

continued on page 23

Q

PC Powerboard compatibility poser

I have just purchased a KCS PC Powerboard. I was wondering if your new mag could print a list of PC programs that will be compatible with the Powerboard, and also to update it monthly to help Amiga owners with MSDOS compatibility problems.

Graham Sumner
Huntingdon
Cambs

A

What a good idea. We intend to review some PC products on the Powerboard and in the meantime you might like to read Mark Smiddy's review of it in *Down to business* on page 67.

A good idea would be for any readers with Powerboards (or AT-Once cards) to send us details of any software that does or does not run on their system. Write to Mark Smiddy, PC Emulation Update, *Amiga Shopper*, 30 Monmouth Street, BATH BA1 2BW. ***MS***

AMIGA TIPS

Here's a useful tip from Steve Clark of Fareham, Hants:

Anyone with 1Mb of Chip Ram who uses the Recoverable RAM Drive may have noticed, as I did, that it no longer retains data after a warm boot. Looking through the Enhancer Software manual for the explanation of all the commands in the startup-sequence, I couldn't believe my eyes when I read that Kickstart 1.3 was designed to work with 512k of Chip Ram. So, to retain data after a warm boot, simply add an 'R' after the SETPATCH command in the startup-sequence, thus:

```
C:SETPATCH >NIL: R
```

I hope there is someone who can find use for this tip.

Thanks, Steve, I'm sure there is. Even as you read this, a fiver should be winging its way towards you.

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As far as fixes are concerned I've got some good news and some bad news. The good news is that this particular 'nasty' has been eliminated with WorkBench 2. The bad news is that there is no current official WorkBench 1.3 fix from Commodore, nor is there likely to be. If there is a PD fix (and I doubt very much if there is) I haven't heard of it. My advice? Hang on in there because WorkBench 2 is only just around the corner! **PAO**

Q

Composing poser

I am a semi-professional musician and am looking for a piece of MIDI software (similar to CB Lab's *Notator* for the ST) to enable me to arrange/compose music for the various bands and ensembles that I play in. I was thinking of buying *Pro 24 Amiga* or *Bars & Pipes Professional*. Could you tell me if one of these would be suitable, or is there a more suitable piece of software?

C B Willard
St Leonards On Sea
East Sussex

A

If you are looking to build a C-Lab-quality *Creator/Notator*-type sequencing and score producing package on the Amiga, then forget it. At the moment there isn't anything that even comes close. The Amiga MIDI scene, despite everything you'll read elsewhere, still has a *long* way to go before it catches up with the Atari ST. This has nothing to do with one machine being better than the other (because we all know that the Amiga is the better machine) it's simply that there is far more good MIDI software available for the ST than there is for the Amiga.

As far as your two choices go, Steinberg's *Pro 24 Amiga* is a good enough sequencer, but it only offers limited score display and there are no score editing facilities at all. Blue Ribbon Soundwork's new *Bars & Pipes Professional* is another very capable sequencer, but I'm afraid that its notation/score handling capabilities bear no comparison with the C-Lab's integrated offerings. To my mind at least, *Bars and Pipes Professional* is best regarded as a creative compositional sequencer, not a combined work-horse sequencer/notator package.

The most sophisticated Amiga notation package comes from Dr T and is called *Copyist Professional*. This can certainly handle the notation side of your work, but be warned – you will not get the notation/sequencing integration benefits that are possible with the Macintosh/Atari-ST alternatives.

If you go for the Copyist you'll still need a sequencer package and, to be honest, I'd stick with something like Dr T's *KCS* – it has stood the test of time, is well supported, and it's also probably the best Amiga sequencer for using live on stage. Its song mode options allow you to load and save sets of songs (up to 16 at a time) and select them in any order instantaneously. **PAO**

Q

Imposing problem

I am interested in video titling and require the super-impose facility. I have been told that the Amiga is the machine for this purpose. I also know that I need a Genlock to be able to superimpose and added memory for the A500 and obviously a titling program. I need advice on anything else that may be necessary that otherwise will not come to light until after I have started, so I can estimate the expense and consider other options.

G L Thornton
Horsham
West Sussex

A

Well, you've covered it pretty well so far yourself!

The amount of RAM you need will depend upon the titling program you wish to run, and it will also govern the size of animation files you can play back directly from the Amiga. If you are looking at buying a second-hand A500, make sure that it has 1Mb of chip RAM (Fatter Agnus Chip) on board, and that it is actually enabled (Commodore shipped some machines with the chip in, but not fully enabled). This can be checked with the AVAIL command from the CLI.

If you buy a new machine, you will not have this problem as they are all fitted with the new chip. 1Mb of chip RAM is necessary to run programmes such as *Scala*. I would recommend that you look at adding at least 2Mb of fast RAM to the Amiga, as then you'll be able to load background images behind text, playback animations (which can require large amounts of RAM to play smoothly) and so on. RAM prices are now much less than they used to be. A second disk drive would also be extremely handy.

With regard to genlocks, you have a wide choice at an even wider variety of prices. Since I don't know your requirements for features and output quality, I would advise that you try a few out before you buy. And you don't always get what you pay for, so be careful. You might consider a Genlock that allows you to fade between the Amiga and video signals, so that you can fade graphics on and off the video.

On the software side, you'll need a good titling package (or two, since you may find that there isn't one that does all you need). Look for quality before features – video titling often doesn't require you to do much more than scroll a set of words up the screen – but if it looks jumpy you'll wonder why you bothered. As with most things Amigan nowadays, there are plenty of choices – read reviews and ask a reputable Amiga dealer. You'll also want some additional software, especially a paint package such as *Deluxe Paint* III, which would be very useful for making logos, artwork and two-dimensional animations, and a good collection of fonts (of which there are many available – both in the Public Domain and commercially). A font editing package, such as *Calligrapher*, will come in handy if you ever need to design your own fonts.

I think that's certainly more than enough to get you started and running for a good while before you'd need to consider buying anything else. Happy titling. **GW**

Q

Fed up

I know that FD files on the EXTRAS disk can be converted to .BMAP files to be used as libraries in Basic, but what can the FD files be used for as they originally come on the EXTRAS disk? And what does FD stand for anyway?

L A Schorah
Liverpool
Merseyside

A

FD stands for Function Description and that, incidentally, is exactly what these files provide. In short they provide details of the library functions and the 68000 processor registers which must be used to hold the arguments (parameters) passed to the function. If, for example, you look inside the graphics_lib.fd file you'll see this sort of thing:

```
LoadRGB4(viewPort,colors,coun
t)(A0/A1,D0)
InitRastPort(rastPort)(A1)
InitVPort(viewPort)(A0)
MrgCop(view)(A1)
MakeVPort(view,viewPort)(A0/A
1)
LoadView(view)(A1)
```

In this case, LoadRGB(), InitRastPort() etc, are graphics library function names and the A0, A1 and D0 are the address and data registers in which the library routines expect to find their parameters.

FD files are not converted to .BMAP files and then used as libraries. The .BMAP file is just a modified 'function description' file – it is used to provide the above interface details in a form which allows Basic's LIBRARY statement to access the Amiga's system libraries.

FD files do have other uses. C programmers, for instance, can use them to create #pragma statements for generating in-line subroutine calls to external libraries. **PAO**

Q

TV or not TV?

Using *TV Text* on an A500, can it be made to scroll? Can pages be saved to be edited at a later date? If so, how?

T A Carrick
Newquay
Cornwall

A

TV Text is one half of a pair of programs, the other half being *TV Show*. *TV Text* is used to create the pages of text, shadows and backgrounds etc, which are then animated using *TV Show*. So the answer to the scrolling part is no, it can't. Pages can be saved to be edited at a later date – refer to your manual for full instructions. If you want to do scrolling text, why not look at buying a dedicated package such as *Big Alternative Scroller*? **GW**

Q

Amiga v entropy

I have a lot of 35mm colour transparencies, up to 33 years old, taken with Agfa Colour film, some of them very faded. I wish to import these slides into a computer using Tamron Fotovix and there upgrade the colours to something like the original, and then output them on to video tape mixed with text and music.

Can you help please?

T H Connell
Whitstable
Kent

A

As I understand it, the Tamron Fotovix is a £500+ dedicated device for transferring 35mm transparencies or negatives onto video, with the ability to provide a degree of colour

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correction by using a joystick to adjust the relative levels of red, green and blue in the resulting video signal. So it would appear that you'll already be some (if not all) of the way there without going near a computer. If the Tamron's video output is to your liking then you should be able to link it up to a computer such as the Amiga, via a Genlock unit, and use a paint or titling package to overlay the text you require before recording the whole lot on to tape. Take care that you use the highest picture resolution (hi-res 640 x 512) in order to get the crispest looking text. Try to avoid HAM mode for text.

But if the transparencies are in need of a serious colouring job, then you'll have to electronically process them. Unfortunately, this will lead to further complications and you'll experience some loss of quality (as video and computers such as the Amiga cannot fully reproduce the fine grain of film).

To carry out the processing, you first need to digitise (electronically grab) the image in HAM mode (4096 colours) by taking the video output from the Fotovix and passing it through a digitiser such as Digiview Gold and a colour splitter to convert the video signal into the red, green and blue signals required by Digiview. This image can then be saved and manipulated by a processing program such as *Pixmate*. This work will take time and needs a serious amount of experimentation and patience to achieve the results you require, especially if you make different adjustments to each slide.

Once the images are processed, you'll need to output them from the Amiga to video tape and then bring the taped images back through a Genlock to caption them (and lose a generation of quality on the way) – this is because putting text onto HAM images will often cause messy-looking artifacts to appear.

Once you've finally edited your transparencies onto video (and I'm presuming that if you're going to all this trouble you'll be using good quality equipment) then all you have to do then is to add your soundtrack. I wish you the best of luck. ***GW***

Q

Compugraphic fonts

Does a word processor exist that uses Compugraphic Fonts?

Carl Beech
Stoke On Trent
Staffs

A

No. Even with a 68030 processor, Compugraphic fonts take time to calculate and display, and they take up an awful lot of memory, particularly at large point sizes.

Although Workbench 2, and therefore every program that runs under it, will support CG fonts (whoops, that's supposed to be a secret), which means word processors will be able to display them, these WPs won't be able to output CG fonts because they have been written either to output bitmap fonts or to use the printer's own built-in character sets.

Your best bet is to first buy yourself a fast, dedicated word processor – I mean one that doesn't support graphics in any way – something like *Protext* 5, and then buy *PageSetter* II, a cheap but very powerful black-and-white DTP program which supports CG fonts. If you shop around, these two together will set you back less than £150 and in my opinion this combination is a vastly superior package to any of the newfangled 'word publishers', such as *ProWrite* or *Excellence!*. ***JW***

Q

Going for it

I have an A500 with a 0.5Mb RAM upgrade and extra floppy drive, and a daisy-wheel printer. My wife used to do DTP work on a Mac and is now contemplating going freelance. Do we upgrade my Amiga system – get a hard drive, Mac emulator, decent monitor and a laser printer – perhaps even going as far as getting a 1500 or 2000; or do we leave the system alone and buy a Mac and laser printer entirely dedicated to my wife's needs? Either way requires a substantial investment and we naturally want to be sure that we are buying the most effective system for our money.

The only Mac emulator I've seen advertised is A-Max. Is it any good – does it turn your Amiga into an exact replica of a Mac? Will the disks and data from it be able to be used on a real Mac? What exactly is the difference between the A-Max and A-Max with 128K ROMs at nearly twice the price?

What do I need to do to the Amiga to get the speed of operation up to that of a Mac when working with large volumes of data stored on a hard disk?

To what extent is hard disk capacity and RAM capacity going to affect speed, or do I need to start mucking about with faster processors, which I'd rather avoid if it means I'm going to have to get my hands dirty wielding a soldering iron and risk destroying the computer by making a clumsy error?

Gareth Looker
Southborough
Kent

A

You sound like you are serious about desktop publishing, so I won't mess about telling you the cheapest way to do things. As you say, it requires a substantial investment.

The Amiga to go for is probably the 1500, which is extremely good value at £999 including monitor, second floppy drive and a valuable software package. But you'll need a hard drive for storing all that DTP data, the larger the better. The beauty of the Amiga 1500 is that you can buy a hard drive on a card (a hard card) which fits into one of the slots inside the case. You'll need a hard drive controller as well. Most hard cards come with a controller on board. Talk to Almathera Systems about this (081 683 6418). The company carries a large range of hard drives and controllers and are very knowledgeable on this subject.

Faster processors, such as the A2630 (68030/68882 with 4Mb of 32 bit ram on board), can also be fitted into the 1500 with no wiring or soldering. You simply open up the case (five screws) and push the card into into an easily accessible slot.

It may be worth contacting Calco Software, which supplies complete Amiga systems, and save yourself the bother of collecting and fitting the various bits yourself.

As for A-Max, yes, it is very good and does turn your Amiga into an exact replica of a Mac. You will be able to swap data disks between the Amiga and the Mac at will, although swapping program disks between the two machines may infringe the copyright of the program in question.

I strongly suggest you see a demonstration of A-Max in action before deciding; there's bound to be someone displaying it at the 16-Bit Fair at Novotel, Hammersmith, in July. Or try Power Computing (0234 270133), which is in Bedford. The version you want is A-Max II Plus, the one on a card that fits inside the Amiga 1500/2000.

A-Max is distributed in the UK by Entertainment International (0268 541126). ***JW***

Q

Power poser

I purchased an Amiga 500 last year for my son and have installed a 512k expansion unit in the computer to increase its games playing power. I also intend to utilise the A500 by purchasing a PC Emulator and have looked at two: the KCS Powerboard and ATonce board. The ATonce board is cheaper and I won't have to remove the extra 512k expansion, but is it as good as the KCS system? Will you be reviewing PC emulators in the near future?

KD Green
Thornaby
Cleveland

A

You must have read our minds! Turn to page 67 for a review of the KCS Powerboard; a review of the ATonce will follow in next month's issue. ***CR***

Q

Round in circles

I am unable to load the printer driver for the EpsonQ (or any other for that matter) using the Extras 1.3 disk. Using the Install Printer command in the Utilities drawer and following the screen prompts, I end up with the message 'Now copying your printer choice to devs/printers'. The machine seems to go into an endless loop of prompting 'Please replace Workebench 1.3' then 'Please replace Extras 1.3'. If you use the cancel selection it presents either 'Error during

continued on page 26

I SEE NO TIPS

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copy. Do you want to try again?' or 'Now choose this printer using preferences'. Whatever the result, when I go to preferences the printer is not available as a choice.

Similarly, if I use CLI and input 'COPY "Extras 1.3:devs/printers/EpsonQ" to devs:printers' by following the screen prompts, it ends up again in a loop using the two messages as before. If I cancel this time the message 'Error while Reading' followed by 'Destination file "devs/printers/EpsonQ" removed.

Mark Burch
Thetford
Norfolk

A

I'm afraid you will just have to be more patient. It takes something like fourteen disk swaps to install the EpsonQ printer driver. You can speed it up a bit by using the CLI – you weren't too far off yourself – but by copying the file onto the RAM: disk before putting it onto the Workbench. To do this, type:

```
COPY "Extras
1.3:devs/printers/EsponQ" to
ram:
```

When this is done, put your Workbench disk into the drive (it must be write-enabled, of course) and type the following:

```
COPY ram:EpsonQ to
devs:printers
```

Now you can go into the printer selection of Preferences and choose the EpsonQ driver. ***CR***

Q

When I'm calling you

When using AmigaBasic I can't call a file or command from disk. Could you please print an example of calling up the 'PLAY' command from within the C directory.

K Cousins
Leeds
West Yorks

A

To do this, you have to make use of AmigaBasic's facilities for calling system libraries. The interfaces to these libraries are stored on the extras disk in the FD1.3 directory. In this case, the necessary file is 'dos_lib.fd', because this contains the 'Execute' function which allows AmigaDOS commands to be called. This must be converted into a '.bmap' file for use by Basic. This is done by running the 'ConvertFD' program in the BasicDemos directory. The resulting file, 'dos.bmap' should be placed in the libs directory of your System disk. Thus a Basic program to use the 'Execute' function is:

```
DECLARE FUNCTION Execute&
LIBRARY
LIBRARY "dos.library"
x=Execute&(SADD("dir"+CHR$(0)
), 0, 0)
LIBRARY CLOSE
```

The function 'SADD' returns the address of the string (which holds the required AmigaDOS command) for use by the Execute function. The last character in the string must have an ASCII code of 0 (a null terminator) to comply with the C string conventions that AmigaDOS expects. The last two zeros in the call refer to the input and ouptut channels to be used by the call: in this case the standard input and output channels.

This program will only work from the CLI or shell, not from Workbench. To do this, open the shell and type "extras 1.3:AmigaBasic" (the quotes are necessary because of the space), then proceed as normal. Note that any output produced from the AmigaDOS command will not appear on Basic's output window, but in the shell window.

With the PLAY command this should not be a problem. Replace 'dir' in the above string with 'play' and any arguments that it needs. ***CR***

Q

Typing trouble

Could anyone tell me if the command on page 113 of *Get The Most Out Of Your Amiga* by Damien Noonan in the section 'Stand alone Notepad' is printed correctly? It says:

```
COPY
c:copy|makedir|install|ed
ram:
```

But when I type this in I get a 'Bad arguments' error. Is this a misprint as I have met other people with the same error?

E Hitchen
St Helens
Merseyside

A

No, it works fine. Make sure to use the correct character for the vertical bar (it is the shifted character to the right of the equals key) and leave a space between 'ed' and 'ram:'. ***CR***

Q

Bored with the USA

I would be very much obliged if you could help me with to change the key configuration from USA to GB in *Pen-Pal*.

On attempting to go in to the SetMap on *Pen-Pal*, there is a message displayed: 'No KeyMap specified in icons TOOLTYPES eg enter KEYMAP=usa, in info menu.'

What do I need to do so that the keyboard can be altered to display the pound instead of the dollar sign.

Fred Orders
Mid-Glamorgan
South Wales

A

Having dusted down my copy of *Pen-Pal* , it turns out that the procedure you require is really rather simple. What you have to do is click once on the SetMap icon. Then, with the right mouse button depressed, move to the top left of the Workbench screen and a menu should appear. Move the pointer down it until the word 'Info' is selected, then release the button.

A window with several boxes inside it will be displayed. Click inside the box marked 'TOOL TYPES', and then just type the following line:

```
KEYMAP=gb
```

(It is important to put the word 'KEYMAP' in capitals.) Then press RETURN and click on the save gadget. Now, double clicking on the SetMap icon will configure your keyboard as a GB one. ***CR***

Q

Wild at cards

I have found a file on a PD disk hidden in a sub-directory. I would like to view the file but cannot as I can't type the file name; it has a strange apostrophe in it which is different to the one above the TAB key on the Amiga. Is there a way I can use a wildcard to edit (ED) the file?

Stephen Taylor
Welwyn
Herts

A

No. Your best bet is to make a copy of the file first. To do this using wildcards you must copy it onto a file that already exists. Make a temporary file on the RAM: disk with:

```
ECHO >RAM:tmp "hello"
```

Then copy the file (substituting the ? wildcard for the untypable character). Eg:

```
COPY df0:fred?bloggs RAM:tmp
```

Now you can copy the 'tmp' file to wherever you want, giving it a more sensible name. ***CR*** AS

AMIGA TIPS

Daniel Moore, of Ipswich, Suffolk, sent in this handy little fix for users of* Deluxe Paint *II:

If your Amiga crashes when you load a picture and then try to edit the palette in *Deluxe Paint* II, don't panic: help is at hand. The problem seems to be caused by a known bug in Kickstart 1.2 and 1.3. It can be fixed by the Setpatch command, in the c directory of the Workbench disk. It is executed automatically when Workbench loads, but not when booting from *Deluxe Paint*.

To copy it, preferably on to a back-up of the *Deluxe Paint* disk, load Workbench and double click on the CLI or Shell. Then type the following (pressing RETURN after every line):

```
COPY c/copy to ram:
COPY c/setpatch to ram:
COPY c/ed to ram:
```

Then insert the *DPaint* II disk and type:

```
RAM:COPY ram:setpatch to
df0:c
```

Now to get the startup sequence to run the fix, it must first be edited. Type:

```
RAM:ed df0:s/startup-
sequence
```

After a few moments of disk activity, the *DPaint* II startup-sequence will appear. Type:

```
SETPATCH >NIL:
```

The NIL: part of it takes the message that SetPatch normally prints and gets rid of it – many commands in the startup-sequence use this to prevent lots of pointless text appearing.

To use the new startup sequence, press Esc, followed by X and then RETURN. Next time you boot with the *DPaint* disk, the bug will have been well and truly patched.

Cheers muchly for the tip Daniel. There is a fiver on its way to you.

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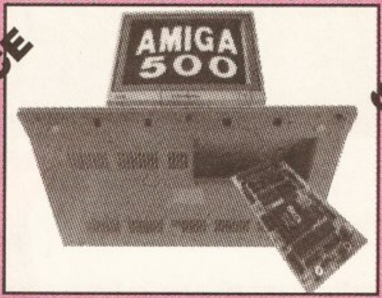
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Phil South

BEGINNERS START HERE

Wading through all the paint packages mentioned in this month's test, you may be forgiven for being a little bit baffled as to which one is really right for your needs. So here is a quick roundup of the best of the bunch, and the reasons why one is better than another for your requirements – from a kid who can't read this paragraph to a pro user with complex needs.

Tops for tots

Kids love colour, and there's more than enough colour in an Amiga for anyone, large or small. Just about any program will do for small children, with adult supervision, but the best piece of software would be Centaur's _My Paint_, a sort of simple colouring book program. The simplicity of _My Paint_ means that a child can colour and re-colour the same thing over and over again without making a mess with crayons and paints. Of course, children like to make a mess and its foolish to expect otherwise, but for a break from prising crushed wax crayons out of the Axminster, _My Paint_ is welcome alternative.

Other programs of interest would be a HAM package for just splurging huge areas of colour all over the place, although memory constraints mean this is best done on a machine with 1 Mb of chip RAM. So if you have a late model

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There was a time when all art was done using things you could grasp, like paint, wood, clay, stone and artist's models. (Oops.) Anyway, in this new electronic age, the computer has rapidly become the favourite creative tool of choice and, although it is less obvious as a creative outlet for your abstract creative urges, the Amiga is well equipped to satisfy your needs, whatever they might be.

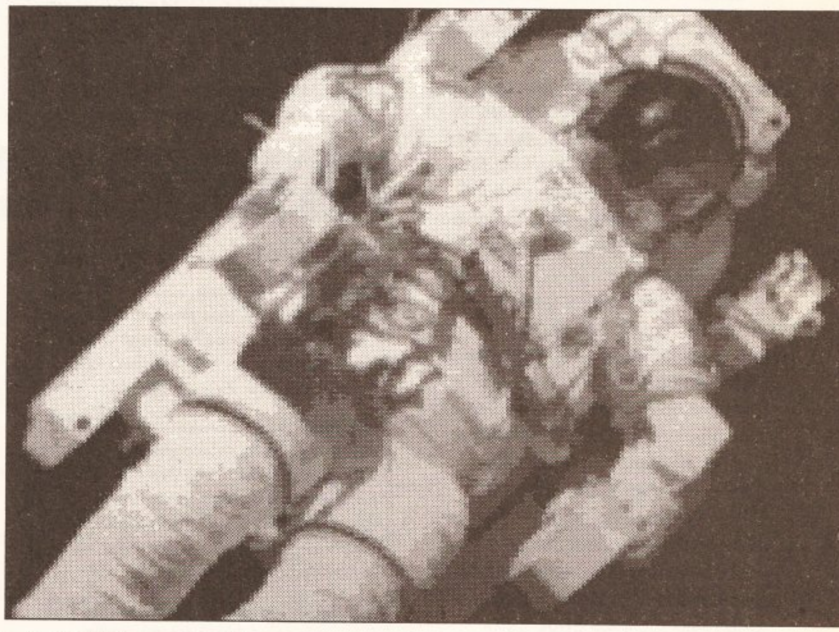
A lot of you might not even have considered the Amiga as a creative tool and, though you may have the odd drawing package around, you might not have a real use for it. Getting more out of your computer is what we're here for, so here is the *Amiga Shopper* roundup of what's what in the 2D graphics stakes.

Why paint?

Why should you need a graphics package? What if you can't draw, or you don't feel you have the skill to even pick it up? Well, the whole point about computers is that they amplify the skills we have, and that goes for every computing task. So in the same way that music sequencers expand the amount of instruments we can play at one time without falling over or pretzeling our fingers, graphics packages amplify our artistic skill in many directions.

The thing is that you might not even know that you like drawing on a computer until you try it. Drawing using computers is so different from using paper and media like pencils and inks that the two are almost incomparable. If you don't use a graphics package then pick one up using our handy tables as a guide. You may find you've got a new hobby you thought was completely beyond your scope. As David Hockney put it, when given a Quantel Paintbox to play with: "The one thing I can compare it to is stained glass, as you have light coming through glass at you. It's like painting with light."

There are two kinds of graphics on the Amiga: structured and bitmap. Bitmap graphics in the standard Interchange File Format (IFF) are the most popular as they use the screen itself as the drawing medium, splashing colour and light across the screen and giving you access to all the Amiga's 4096 colours to create artwork that can just be shown on-screen or even printed out. Bitmaps are very quick, comparatively small in memory and colourful. But they are really limited to being shown on the screen, or printed out quite small to conceal their jagged bitmap edges.



Out-of-this-world art is easy on your Amiga, and you don't have to pay astronomical prices to get off the ground. _(Sack that caption writer – Ed.)_

Big equipment

Structured drawings are more serious, and require a great deal more equipment to get the best from. Instead of merely drawing to the screen, the program takes notice of how you drew the picture on the screen. Instead of just storing a bitmap image of the picture, the outlines and fill colours you used are stored, so the picture can be drawn on the screen at any size and printed out on a printer in superb, jaggie-free, smooth lines and tones. The trade off for all this superb quality is memory, as the instructions to redraw the picture take up a lot of memory and memory is at a premium in most systems. Just as points mean prizes, memory means money. For the purposes of this piece I'll be ignoring structured programs, but be sure I'll be looking at them another time.

There are many different ways you can get graphics into your machine in the first place. Obviously, the best way to originate your graphics is to draw them by hand using the mouse. But unless you are either skilled at using a mouse or a good artist to start with, this can be a bit of a problem. So digitising is the first and most obvious way of getting around this.

Devices exist that can take an

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image from a video recorder or camera (see this month's Graphics column on page 54 for more details on that) and store it as an IFF file. Digitising is good for colour work, and, by using up-to-date digitisers, you can even get pure, almost photographic quality images. These can be treated with colour or moved about and altered in some other way, and the output can be printed off to a colour printer to give very sophisticated results.

More often than not, however, digitised graphics will form the basis of a greater artwork. Which brings me to the second very interesting way of getting graphics in, and that is by drawing or tracing an image onto paper and using a hand scanner to turn it into an IFF file. This is good because you are effectively sketching

> ***"Many 2D paint programs feature animation among their list of tools."***

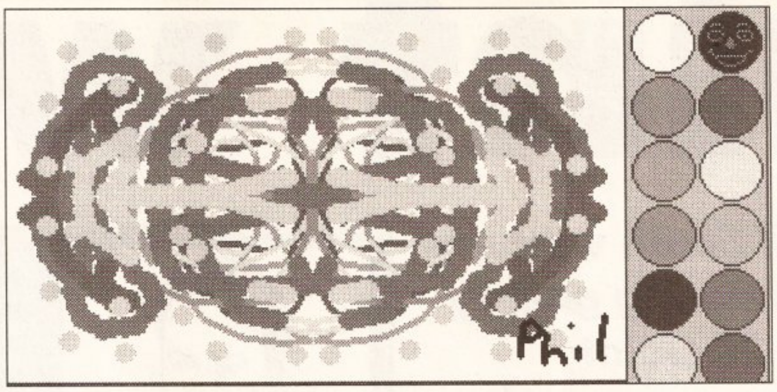
the image using a pen, but colouring and shading with the computer. A lot of artists who find the mouse a bit hard to cope with tend to find this process easier to handle, and the materials you need amount to about £150, plus whatever your graphics package costs.

Other methods for getting graphics in, and out, of your computer include using a graphics tablet with a stylus – a favourite amongst artists more used to using a pen. The one big trouble with these is that, in the main, they are only available in the USA, although exchange rates being what they are, this is usually a good deal even with import duty etc. The pen-like stylus is employed on the blank surface of the tablet and the lines appear on-screen. It is feasible to place artwork on the pad and just trace it – that being a sort of manual digitising technique – but usually the idea is that you just draw on the pad and it comes out on-screen.

2D or not 2D

So what are these packages really like. The only way to tell is to try them all, so I did. Of course, the features you might want from a paint package depend on the purpose you have in mind for it. I've tried to identify the particular strengths and weaknesses of each so hopefully you'll get a good idea of which package is the right one for you.

My Paint



You can sanitise the splodgy mess that kids love to make with *My Paint*.

Centaur

A nice, simple, brightly coloured package for kids, more like a big electronic colouring book than a real painting package. Having said that though, it does do this one simple job very well and as a first computer tool and an educational package it does have enormous benefits over the more complex art packages in its simplicity and colour.

In use

The program is deliberately constructed with noisy icons and other sorts of stuff that would irritate adult users and delight your average kid. The tools are as much 'earcons' as icons, a concept that will (if it hasn't already) spill over into professional packages very soon. 'Earcons' is an idea by the same Xerox Palo Alto scientists that brought you the icon and WIMP environments.

The icons are animated as well as sonically surprising, so will keep kiddies amused for hours, even if they aren't producing much in the way of drawings. The program features a palette of just 12 colours, although why this is isn't made clear. What happened to the other four colours?

Conclusion

My Paint is a nice bright intro to computer art, and I don't know a kid who wouldn't love it. It's mainly for quite young kids I would say, as after about eight I think they'd benefit from *DPaint* or something more serious.

Checkout

My Paint

Ease Of Use............14/15
Very easy to use, and it has to be, particularly in view of its target usership. Nice friendly icons and very little to confuse even the dullest child.

Speed 6/10
Not as fast as its pro counterparts, but the users aren't going to be that fussy about how quickly the thing moves along. It doesn't handle any of the crazy memory-intensive graphics modes anyway, so no real speed problems as such.

Output 4/10
Print options on *My Paint* are a little spartan, giving you straight preferences printer support and naff all else. No re-sizing and no aspect control. But then the child would probably eat it if it was there, so its no great loss.

Graphics Handling 2/10
IFF or wot? Well if you want 24-bit files and HAM forget it. If you just want to save little Timmy's daubs for posterity, then you can, so where's the problem. Oh yes and *My Paint* is NTSC only, so you can forget using the bottom of the screen too!

Colour.......................5/10
12 colours, all of them very bright to suit the younger set. You do have eight palettes to choose from however, so you can swap them around a little bit. Not as good as choosing your own colours, but let's keep it simple for the poor lad or lassie.

Text Editing.................0/5
Look the kid can't even read properly yet, and you want text editing in his electronic colouring book?

Tools 6/10
Not a big range of tools, but they are very easy to use and fun too, what with the noises and stuff.

Documentation.........4/10
Just enough so you can tell nipper how to use the thing, but frankly you'd have to have your brain installed backwards if you couldn't work out how the package works within 10 seconds.

Price Value.............18/20
Good value fun for kiddies everywhere, and an excellent introduction to the Amiga computer for those sticky little fingers. (Urg. Maybe educational software is not such a good idea after all.)

AMIGA SHOPPER 59/100

A great little program which, although light on features, is really heavy on fun. It's no great shakes in most other departments, but then it costs much less than other programs and is intended as an extremely basic package for children.

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adapted A500 or even a 2000, and your child is responsible enough not to batter your keyboard to death, then you can leave them to it.

Painting with light

There are two different types of users who want paint packages: those who want to draw and those who want to paint. Drawing is cleaner and much more lifelike. Painting, just like canvas and brushes, is more fluid and needs a larger palette so you can mix colours.

HAM mode is the best tool for paintings and NewTek's *Digi-Paint* 3 is my own tool of choice for this purpose, because of its speed and ease of use. The tools are very advanced and some astonishing special effects are possible with the minimum of fuss. Shadows and the ability to map your images onto theoretical shapes make this the tops for FX, and the 'rub-thru' effect isn't easily done anywhere else.

For more accurate colour drawings, for printout, DTP and especially on-screen graphics, the only choice must be *DPaint* III from Electronic Arts. *DPaint* is the classic Amiga graphics package, and although it's gone through three revisions since its original release, a user who used the first one could use the last without changing a thing. *DPaint* is still the only package I have permanently mounted on my hard disk, because I use it so much. I think the old chestnut about 'if it didn't exist someone would have to invent it' applies.

Jag-free zone

For jaggie-free illustrations there is only one choice, and that is *Professional Draw* 2.0 by Gold Disk. Other structured drawing packages may turn up eventually, but *Pro Draw* got in first and it's so advanced now that it's hard to imagine how any other newer package could compete. The *Pro Draw* 'clip'

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POSTSCRIPT

A couple of the programs we looked at handle PostScript, a special page definition language written by Adobe Systems, designed to produce high quality half-toned output. The language sends what amount to programs – a stream of text instructions – to the printer, which interprets the commands and draws the picture on the printer at very high resolution. *Express Paint* handles PostScript, and so does *Professional Draw*, although you can actually add PostScript to any paint program by using public domain software.

***Claz* and *IFF2PS* are two such programs (available on the Fish disks or through bulletin boards). They take an IFF file and turn them into PostScript bitmap images. These files can then be sent to a PostScript printer, either by connecting a PS printer directly to the Amiga, or by converting the file to Apple Macintosh or PC format and sending it to a DTP Bureau.**

DISPLAY CATEGORIES

There are four types of graphics display on the Amiga. 32-colour is the usual low-res screen format, and this assumes high-res 16-colour and interlaced formats too. Some packages also feature 64 'halfbrite' mode, which is the same 32-colour palette with another 32 of the same palette, but this time half as bright. (Stands to reason really.) HAM stands for Hold And Modify, and is a hardware trick in the Amiga that squeezes the whole 4096 colours available on the Amiga onto the same screen. This is done by basing the colour of any one pixel on the one before it, which explains the woolly effect you get with it. 24-bit is the new standard and needs extra hardware. This gives you 16 million colours, almost as many as you can see with your eye!

Accolade

A very basic package, without the kind of fluidity of control you expect and get with the likes of *DPaint* III. The tools are a little clumsy and the program leaves much to be desired in the features department. The program is very basic, and would suit someone who wants to try out art on the computer but can't afford to lash out the cash for a pro program. Novices would do well to look at this program, but try before you buy as you may find it lacking in the kind of whizz-bang graphics you bought your Amiga for.

In use

The program is very light on features, almost to an annoying degree, and is almost like a big brother to *My Paint*, with a similar degree of simplicity. This is perhaps a good package for beginners, or even older children, as the tools are less basic than *My Paint*, and quite complex pictures can be built up with very little effort.

The sample pictures were drawn by experts to make the package look good, so don't expect to reach that standard right away. One good feature is its magnify window which, of the cheaper packages, is one of the best. Its a half-screen window, giving you ample room to move around and draw minute details. And there are three levels of magnification, so you can adjust the amount of the picture you can see.

The program allows you to draw in either low-res or high-res, but no interlace or HAM is supported, meaning this is a low-memory program usable in 512K machines. 32 colours are available – less than in many other packages – so the limited palette and screen resolution options place it in the beginners' bracket.

Conclusion

A cheap graphics program, written with the beginner in mind. But not so simple that you feel cheated. It is good value, but not to be confused with programs like *DPaint* or *Digi-View*.

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THE GRAPHICS STUDIO



Wild and groovy results that would please any novice hippy are possible with *The Graphics Studio*, provided techno-fear can be overcome, man.

CHECKOUT

The Graphics Studio

Ease of use..............9/15
Not particularly intuitive, but a better bet for the new user than something like *Pro Draw* or *DPaint*. Nice and simple, but if you work at it you can produce some very nice work indeed.

Speed 5/10
No Speedy Gonzales, but at this level, speed is not the issue. Providing graphics at the right price for the tentative computer artist is.

Output 4/10
Just like *My Paint*, this program only supports whatever printer you've got attached to the printer preferences program. You can't dibble around with it either, just bang out a full frame and like it.

Graphics handling 5/10
IFFs or nothing it seems, but then again this won't bother the new user, as he probably wouldn't know a brush or palette file if it bit him on the nose.

Colour.....................7/10
Only 32 colours, but it does have more ranges to set for colour cycling, 32 more, in fact, than any other program tested.

Text editing...............3/5
You plonk the text cursor down and type, and you can actually edit the line before you type return or take the text mode off, so it's sufficient to do text. But that's it.

Tools........................6/10
Three levels of magnification is better than both *Express Paint* and *Digi-Paint*.

Documentation.........6/10
A 60-page ring bound manual takes you through the program and, although it's fairly comprehensive, I found it a bit hard to read. It does have a index though for when you get stuck and all the information you want is in there if you can find it.

Price value............16/20
Same price as *My Paint* in most places I've seen. This is good value too, for the extra features you get for your money.

AMIGA SHOPPER.................................. 61/100

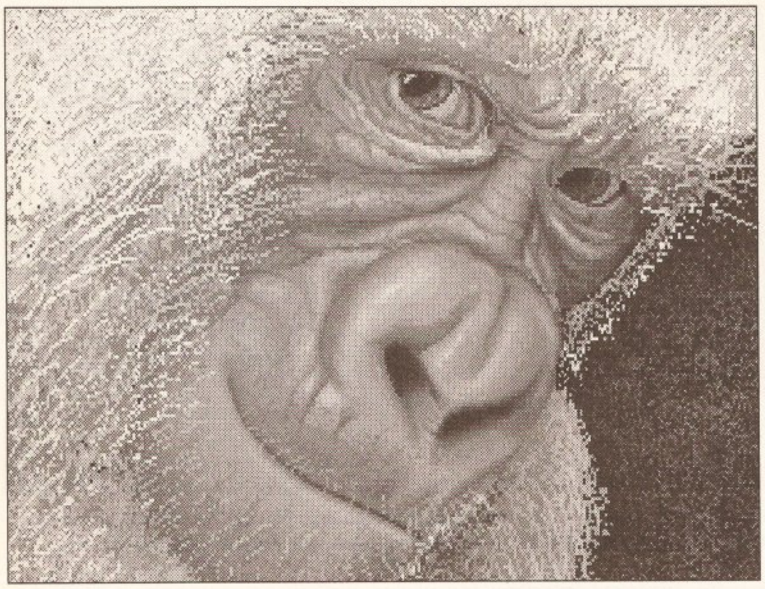
A very good beginners' program, and one which has a little niche all to itself in the market. Novices will do well to start here.

MEMORIES ARE MADE OF CHIPS

One thing that often holds you back in using graphics applications is a lack of chip memory.

This is the base level of memory installed in the machine when you buy it. The reason that chip memory is crucial is that this memory is used by the custom chips in the Amiga, including those that govern graphics. So if there isn't enough memory added to the system (expansion memory is called 'fast memory') then the computer simply can't handle the graphics. If the chip memory is doing all the work (that is, if you have no real fast memory to speak of) then the program either won't work properly, or in the case of *Pro Draw* 2.0, will crash spectacularly. The only solution to this problem is to either:
1) get a lot of fast memory to give the program a bit of headroom.
2) get a fatter Agnus chip, which enables you to have more chip memory.
3) get a fatter Agnus chips AND a lot of fast memory. Whichever way you slice it, you can't do all possible graphics tasks on an unexpanded Amiga without some risk of it falling over in a big heap. Sorry about that, but them's the breaks (screeech).

DeluxePaint III



***Deluxe Paint* shows science aping art at its most effective. Possibly the best art package available for the Amiga and certainly very impressive.**

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Electronic Arts

The undisputed king of the 2D programs, and now in its third incarnation, *Deluxe Paint* III is becoming something of a standard animation engine too. The only real drawback to this program is its lack of a HAM mode, meaning that you can't read or edit HAM mode pictures. You can, however, create pictures in all other Amiga resolutions from low-res two-colour pictures up to high-res and even 64 halfbrite-colour mode.

In use

The tools are very intuitive and a lot can be done using tool tricks, which augment your drawing talents beyond their usual limits. You can magnify the drawing and scroll around it in magnify mode, enabling you to draw very small and detailed drawings very easily, and indeed edit existing drawings with pixel-perfect precision.

The great benefit of *DPaint* is that the page size can be altered to any size you like, and the image can be scrolled around at will. This means that big maps for games can be drawn and then fitted together, which has proved a boon for developers and home programmers alike.

The magnify mode is the best on any graphics package I can think of, with 22 levels of magnification to choose from, allowing you to draw freehand or just pick out individual pixels at any size you want.

Although just a 64-colour program, the animation, plus all the superb still graphic effects, put it head and shoulders above even the HAM programs. The animation side is well thought out, though a lot of the features are so well buried in the massive manual they might as well be undocumented. I recommend going through the docs with a fine-tooth comb if you want the best from it.

Conclusion

It's the best. Nobody has ever reviewed a graphics package without comparing it to *DPaint*. And no user I know is disappointed. You never here them say, "I wish it would do this".

If you think you need a bit of muscle in your package, then buy *DPaint* III or you'll regret it.

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JARGON BUSTING

BITPLANE/BITMAP: A bitplane is an area of memory where every binary digit (or'bit') corresponds to a pixel on the screen. One bitplane represents a monochrome image, several can be overlayed (a bitmap) to represent a colour image.

IFF: Interchange File Format is a means by which data from different graphics or sound sampling programs are saved in a compatible way.

ILBM: Interleaved Bit Map is the IFF sub-format in which graphics are stored.

JAGGIES: The jagged edges seen on diagonal lines, caused by the use of small, but finite rectangular pixels to make up a picture.

NTSC: National Television Standards Committee. Name for the TV colour coding system used in the USA. It has 525 horizontal lines, so programs running in NTSC mode leave the bottom portion of the screen blank. PAL is the British system. It has 625 lines.

PIXEL: A picture element – one of the thousands of tiny rectangles that make up a computer screen.

24-BIT GRAPHICS: Normally, the Amiga uses between one and five bits (each in a bitplane) to store the colour of each pixel of a display. This means that between two and 32 colours can be displayed.

CHECKOUT

DeluxePaint III

Ease of use............15/15
A piece of cake. There is a sort of learning curve to it, where you struggle a bit to learn all the functions, but most of the learning is so pleasurable you hardly notice it. And before you know where you are, you're a *DPaint* artist. Take time to learn the shortcut key presses, as these make you fly along!

Speed 8/10
It's fast, but only if you are in low-res. Interlace and high-res pictures take much more time to do things, especially when you're transforming something. Get 1Mb of chip ram or you'll only be able to see eight colours in high-res most of the time.

Output 9/10
First class output, with a big requester giving you control over the output. You can scale it, shrink it, rotate it, in fact anything you like.

Graphics Handling 8/10
It doesn't handle PostScript or anything like that, but it does load and save IFF, ANIM, animbrush, and brush files, which makes the importing and editing of all your animations and still pictures very easy indeed.

Colour......................9/10
Good colour control, with six cycle ranges, 32 or 64-colour palettes, and various tricky stencil and perspective tools. More colour control than you can shake a paintbrush at.

Text Editing 4/5
Very cool text editing and full font requester, enabling you to use any fonts in the fonts directory. Being a requester and not a menu, it doesn't freak out completely when you have 20-30 fonts like I've got on my hard disk.

Tools........................9/10
Some useful tools, some brilliant tools, and some really crazy ones. My favourite is the mirror and tile tools, which enable you to draw huge colourful kaleidoscopic patterns all over the screen with one brush reflected eight ways.

Documentation.........8/10
Huge manual, and very well written too. Takes you through a tutorial and feeds you all the right information right when you need it. It has the best manual of the bunch, but then Electronic Arts always was good at manuals.

Price Value............20/20
A massive program with a small price. This program is a real life, honest to goodness bargain guv'nor, and no penny was better spent.

AMIGA SHOPPER 90/100

A top-flight stonker of an Amiga program and although very old, as the interface is the same as the original program sold to A1000 users way back in the Dark Ages, it is still as fresh and crispy as the day it was first coded. I think every home should have one.

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format is so widely supported by other packages that it has become something of a standard, merely by being the only such package around for a long time. Fortunately, unlike so many lone programs in any particular field, *Pro Draw* is in fact an excellent program and doesn't need any competition to make it any better. But I'll discuss structured drawings another time, as *Pro Draw* is in a class of it's own.

Animated conversation

And finally there's the animation question. Many 2D programs these days feature animation among their range of tools, and this just means they are able to store a series of frames and play them back at varying speeds. Most feature the ability to save these frames as ANIM-format files usable in a variety of playback utilities, particularly in the multimedia and professional video quarters.

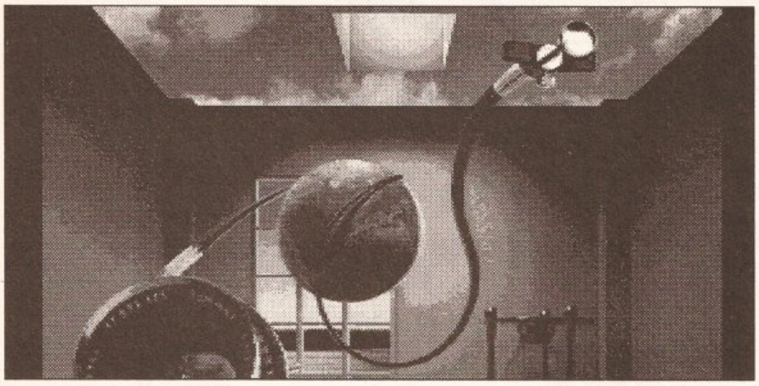
Of the programs around, I'd still rate Electronic Art's *DPaint* III as my favourite animation machine, although Disney's *Animation Studio* comes a close second. The professional animation tools in Disney's offering make it a firm favourite among animators more used to conventional animation techniques. But for memory-efficient storage and playback of your animations, *DPaint* wins every time.

And back to the studio

By the way, I've left out Disney's *Animation Studio* from this roundup for two reasons: first, I've looked at it in great depth in issue 1 of *Amiga Shopper*, and second, it doesn't shape up much as a graphics creation tool, as its forte really is in animation.

If you are intrigued, however and you've been and gone and missed the review in issue 1, you can order your own copy by sending £1.50 (this covers post and packing) to our back-issues address (see page 111).

Deluxe PhotoLab



Versatility is the name of the game with *Photolab*'s image manipulation.

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Electronic Arts

PhotoLab is the only program to cover all resolutions available on the Amiga, and the only program (actually a suite of programs) to give you access to both HAM, 64 and 32-colour images, right down to two-colour pictures.

The suite comprises of Paint, Colors and Posters. Paint is a paint program, most unlike *DPaint* in operation, but good enough to allow the creation of graphics without too much wrestling. Colors is an image processor, allowing you to change the resolution and colouration of any IFF format image, and also provides a range of unique special effects.

In use

Although Paint is a little bit odd at first, it is actually a very good little paint program. Most of the palette info is on another screen, which you can get to by selecting the back and front gadgets on the paint screen, or by the Amiga-N and Amiga-M shortcut key presses. Although not as intuitive and easy to dive into as *DPaint*, *PhotoLab* Paint is a powerful tool – at the very least enabling you to edit everything from a digitised HAM image to a two-colour scan.

Colors is very much the centrepiece of the suite, covering a range of very useful utilities such as the ability to render a picture up in monochrome from any format. This is good for creating mono illustrations for DTP work, especially if you're not sure how they'll turn out. Finally Posters allows you to print out pictures in big sizes, and it does this by dividing the picture into A4 sheets and lets you stick them together.

Conclusion

Although not as good as Electronic Arts' *Deluxe Paint* III package, as far as creation of great graphics is concerned, *Deluxe Photolab* is chief among the tools I would employ to treat graphics that have been created in another medium.

Checkout

Deluxe Photolab

Ease of use.............10/15
Easy to use and very powerful. Everything is done with on-screen buttons. There are advanced functions on the menu bar.

Speed 7/10
Not much waiting around, although I'd recommend a fast processor for anyone intending to crunch a lot of big files.

Output 9/10
Output is very good, especially the Posters program, which employs special algorithms to smooth out the pixelated quality of really big enlargements.

Graphics handling 8/10
Accepts all Amiga IFF formats, and no messing. Also allows you to convert these to any other format too, so is the ideal partner for *DPaint* III.

Colour.......................9/10
More colours than there actually are. Well actually as HAM mode covers 4096 colours, you're looking at that many. Very intelligent routines allow you to cut colours without losing the sense of the picture.

Text editing.................3/5
No real text editing to speak of, but as this is mostly useful as a treatment program for files created elsewhere this isn't a problem.

Tools.........................9/10
More tools than a plumber's van, and all of them easy to get at. Just bang the on screen buttons and bob's your uncle. I like to use *PhotoLab* to chop files around, and although I prefer the quality you get with ASDG's *The Art Department*, PL chops files around very intelligently.

Documentation.........9/10
Another nice big book from Electronic Arts, and well up to its usual standard. Everything is where it should be and there's not a word out of place.

Price value.............19/20
Three excellent programs for the price of one, and that's a pretty good deal in anyone's language.

AMIGA SHOPPER.................................. 83/100

Another great and very solid product from Electronic Arts, with features bristling from every orifice. It's a bit shy on the image creation front, but very good at making medium-strength graphics look very hard indeed.

PAINT PACKAGE FEATURE CHECK ● PAINT PACKAGE FEATURE CHECK ● PAINT PACKAGE FEATURE CHECK ●

	My Paint	The Graphics Studio	DeluxePaint III	Deluxe Photolab	Express Paint	Digi-Paint 3	Photon Paint 2.0
Toolbox toggle		●	●	●	●	●	●
Clear screen	●	●	●	●	●	●	●
Spare page		●	●	●	●	●	●
Low res	●	●	●	●	●	●	●
High res		●	●	●	●	●	●
Interlace			●	●	●	●	●
64 halfbrite			●	●	●		
HAM				●		●	●
overscan			●	●	●	●	●
Airbrush		●	●	●	●		●
Airbrush size			●	●	●		●
Freehand dotted		●	●	●	●	●	●
Freehand continuous	●	●	●	●	●	●	●
Line		●	●	●	●	●	●
Curves (bezier)			●	●	●		●
Rectangle		●	●	●	●	●	●
Circle		●	●	●	●	●	●
Fill		●	●				●
Brush fill			●	●	●		●
Perspective fill			●		●		●
Brush tools		●	●	●	●	●	●
Freehand brush				●	●	●	●
Brush rotate		●	●	●	●	●	●
Remap brush colour			●	●		●	●
Wrap on 2D			●	●		●	●
wrap on 3D							●
Perspective brush			●		●		●
Smoothing			●	●	●	●	●
Antialiasing			●	●	●	●	●

CHECKOUT

Express Paint

Ease of use..............6/15
Not the easiest of interfaces to get to grips with. Has more in common with a novice program like *Graphics Studio* than what I'd expect from a professional program.

Speed 7/10
Speed is okay, although you do get tired of seeing the word 'Thinking' when the program is working on something.

Output 9/10
Nice output, especially from PostScript. This needn't be a closed avenue to you if you haven't got a PostScript printer. See if your local DTP bureau can handle PostScript output, and you could even use one of the PostScript interpreters available for the Amiga.

Graphics handling 6/10
The formats handled by ExP are IFF ILBM screens, brushes, PostScript format files and colour palettes. PostScript pictures cannot be imported, just printed out. Neat way of converting ILBMs to Postscript, although *Professional Draw* does a better job on that score.

Colour.....................5/10
It handles all the colours all right, up to 64 of the little devils. The colourising functions are better than *DPaint*, so it scores points there, but how many times a day will you want to colour black and white pictures?

Text editing...............3/5
Text editing is okay too, with support for ColorFonts, and even a little text editing and formatting too. Another score over lesser programs, but once again *DPaint* does it better.

Tools........................4/10
Lots of tools and they work OK too, but the layout is confusing and you can't get rid of the damn things.

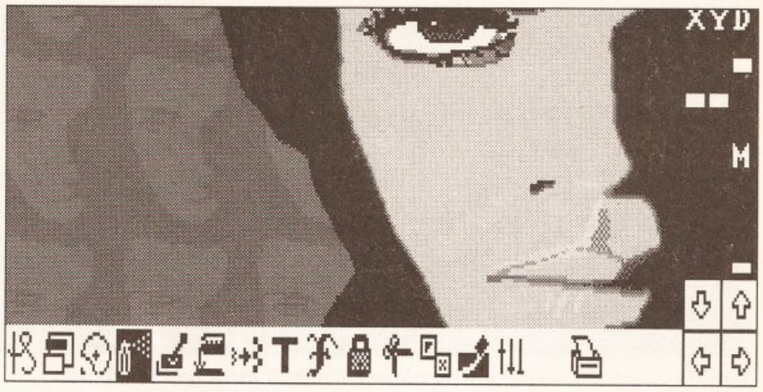
Documentation.........5/10
I thought the manual was a bit woolly and not very well laid out, but the information is there if you delve a little bit. There's too much trumpet blowing for my taste though.

Price value...............8/20
Express Paint is not a product I'd be that happy with, especially as it's only a little bit cheaper than *DPaint* which is so much more useful.

AMIGA SHOPPER.................................... 53/100

A glowing example of the adage that specification sheets and features don't make a brilliant product. The feel of the thing has been neglected and this spoils the enjoyment of the features for me. Not nearly slick enough yet, but give it a few more revisions and it should eventually knock *DPaint* into a cocked hat.

EXPRESS PAINT



Tools in profusion, which have a marked reluctance to disappear on cue.

Oxxi

Express Paint used to be a freely distributable program. It has now gone commercial (it was on Fish Disk 117), and to be brutally honest it shows. *ExP* is written by veteran Amiga PD author Stephen Vermeulen, famous for all manner of tricky graphics programs of varying sorts in the Fish library for one. The program allows you to paint in 32-colour and 64-halfbrite, but not HAM. The tools are run along the bottom of the screen, and access to the areas covered by the tools and menu bars is via a quartet of arrows in the corner of the screen.

The program changes the sidebar of tools depending on which icon you click on at the bottom of the screen, and then the tools at the side are clickable to actually create and edit the picture on the screen.

In use

Unlike some of the other front-runners, it is unable to wrap brushes on 2D or 3D surfaces, which this limits the number of special effects available. It doesn't have any animation facilities either, so in straight contest with *DPaint*, it falls short of the mark. Obviously, a program written by a single programmer isn't going to be as rich in features as a product which has been honed by a large software house for years, but be warned that *ExP* might not be all you are looking for in a graphics program.

There are some unique features however. You can save palettes out for use by other pictures; you can type text to the screen from a ASCII file; its undo levels are limited only by memory; you can print brushes to your prefs printer. And one thing you can do with *ExP* that you can't with *DPaint* is print out to PostScript, which is of limited value to your average Joe.

Although the program has most of the features associated with a standard Amiga paint program, in use it doesn't feel right.

Conclusion

I know *Express* has a mass of devoted followers, but it doesn't do much for me. The interface seems a bit clunky and I feel like I'm not really in control on-screen. The features look good on paper, but they are a bit 'hackish' – more appealing to the programmer than the end user. None of the features really enhance the process of creation of graphics, and so are not very useful.

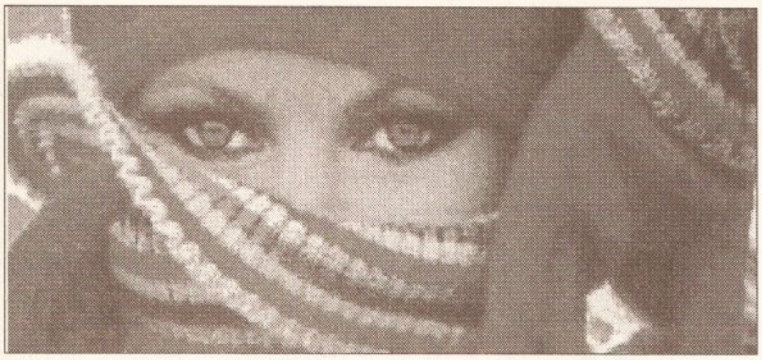
The one feature which boosts this program's otherwise risible score is the inclusion of a PostScript output facility. This exists on no other bitmap graphics program as far as I know.

continued on page 38

PAINT PACKAGE FEATURE CHECK ● PAINT PACKAGE FEATURE CHECK ● PAINT PACKAGE FEATURE CHECK ●

	My Paint	The Graphics Studio	DeluxePaint III	Deluxe Photolab	Express Paint	Digi-Paint 3	Photon Paint 2.0
Colours (max)	12	32	64	4096	64	4096	4096
Colour cycling	●	●	●		●		
Print using prefs	●	●				●	●
Print with aspect alter ratio			●	●	●		
Print in colour			●	●			●
Print in postscript					●		
Page flip animation			●				●
ANIM animation			●				
Anim brushes			●				
Set brush path			●				
Files: IFF	●	●	●	●	●	●	●
ANIM			●				●
Animbrush			●				
Brush			●	●	●	●	●
Postscript					●		
Grid		●	●				●
Magnify		●	●	●	●	●	●
Magnify using all tools			●	●		●	●
ARexx interface			●	●		●	●
Text		●	●	●	●	●	●
Flexible font directory			●	●		●	●
Text shadows							●
Colourfonts			●	●			●

Digi-Paint 3



If looks could kill, Digi-Paint could well become the ultimate weapon.

continued from page 37

NewTek

HAM paint packages were all the rage a few years ago, but recently they seem to have fallen from favour. *Digi-Paint* was one of the first and remains in my opinion one of the best.

In use

Digi-Paint is good because it feels very slick in use except that there are a lot of wait balloons. HAM is a memory-intensive format, so every time you draw a line on the screen or activate an effect, the screen redraws itself. This takes time. I wouldn't want to give you impression that *Digi* is slow, because considering the amount of graphics data the program is chewing at most times, it's flying along.

The tools are good too, with all manner of nice effects easily accessible. My favourite is the graduation tool which moves a point of light around a filled object, allowing you to put highlights onto your objects easily. *Digi-Paint* is one of the few programs that lets you do 3D effects in a 2D program with ease.

Conclusion

Like *DPaint*, *Digi* is on its third revision but still looking good. The tools make it one of the most flexible image creation programs on the market. HAM is too big for some people's computers, as it needs a minimum of 1 Mb of RAM to work, and it's helpful of course if that 1 Mb is chip RAM. The one thing *Digi* doesn't do is animation, but then I've always been dubious of HAM animation programs, as they need massive memories to work almost at all, which rather limits the demand for them.

Checkout

Digi-Paint 3

Ease of use............14/15
Just point to what you want and click it. Of course you have to draw too.

Speed 6/10
Slow at first, but once used to how long it takes to do things, it isn't too bothersome.

Output 7/10
HAM pictures always look good on the printer, as the blurry tones of the HAM image blur any lack of resolution.

Graphics Handling 4/10
Handles IFF screens and brushes, but that's all. You can't save a HAM palette anyway.

Colour......................9/10
Loads of colour, and very good control over where the colours actually go.

Text Editing................5/5
Digi has the same kind of text handling that *DPaint* does, but having access to all 4096 colours in the Amiga's palette, *Digi* can anti-alias its text for smoother lines.

Tools........................8/10
I like the tools in *Digi* and there are a lot of very neat special FX built in. Tinting and shading are very easy to do.

Documentation.........7/10
Good docs. It's a readable manual, and very well laid out too.

Price Value............19/20
Cheaper than its only competitor and makes a unique image creation tool and treatment suite.

AMIGA SHOPPER 79/100

More HAM than a butcher's shop. This is the best value package in the HAM market, even without the animation facility. But then that's not what HAM is about in my view.

Shopping List

***MyPaint*.......................£19.99**
by **Centaur** 4451-B Redendo Beach Blvd, Lawndale, California 90260 USA
☎ 010 1 213 542 2226
Distributed in UK by:
HB Marketing Ltd Unit 3, Poyle 14, Newlands Drive, Colnbrook, Berkshire SL3 0DX ☎ 0753 686 000

***Deluxe Paint III*..........................£79.99**
***Deluxe Photolab*.....................£129.99**
(*Photolab* now discontinued, but still in stock at some stores)
by **Electronic Arts** 11/49 Station Road, Langley, Berks SL3 8YN ☎ 0753 49442

***Photon Paint 2*..........................£89.95**
by **Microillusions**,
PO Box 3475, Granada Hills, California 91394 USA ☎ 010 1 818 785 7345
Distributed in UK by:
The Software Business
Brooklands, New Road, St Ives, Huntingdon, Cambs PE17 4BG ☎ 0480 496497

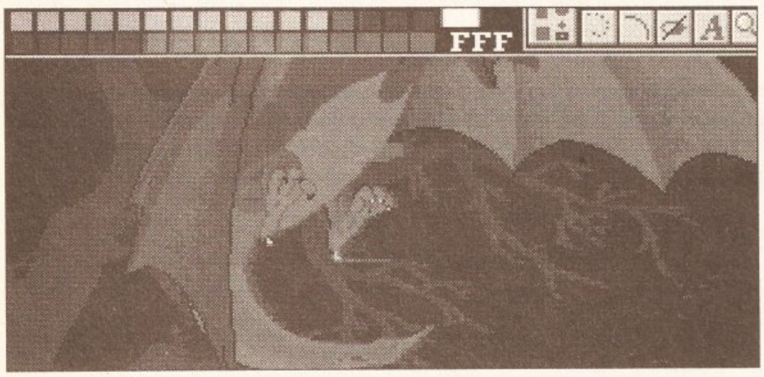
***Digi-Paint 3*...............................£79.95**
by **NewTek Inc** 215 SE 8th Street, Topeka, Kansas 66603 USA ☎ 010 1 913 354 1146
Distributed in UK by:
HB Marketing and **Silica Shop**
1-4 The Mews, Hatherley Road, Sidcup, Kent DA14 4DX ☎ 081 309 1111

***Express Paint*.....$139.95** (discontinued)
by **Oxxi Aegis** PO Box 90309, Long Beach, California 90809-0309 USA
☎ 010 1 213 427 1227

***The Graphics Studio*........$49.95** (£TBA)
by **Accolade Europe Ltd** 50 Lombard Road, London SW11 3SU ☎ 071 738 1391

Some of the packages reviewed are discontinued, but still available from certain dealers. Don't forget, **shop around** for the best prices.

Photon Paint 2.0



Soon to be upgraded, *Photon Paint* has become something of a dinosaur.

MicroIllusions

Photon Paint is another veteran of the HAM wars, and its final gambit before being revamped as *Spectracolor* (I'll review that when I get a copy) was to add animation to the thing.

In Use

The program is very slow, but this is only to be expected due to advanced features like mapping brushes on 3D objects etc. There are some very advanced features like light source shading and, though this can allow you to do some cute things with the program, such features eat memory. Shadows are automatically set by the direction of light and intensity, but as objects aren't 3D, results can be erratic. There are some very good features, like a 'video' mode which hides all menus and pointers for laying frames down to video.

Conclusion

HAM artists are divided between *Digi-Paint* and *Photon Paint*, so it remains to be seen what happens when *Spectracolor*, comes out. But for the time being *Photon Paint* is a huge program. Not for the tight of pocket either, as you will need more memory and a fatter Agnus chip.

Checkout

Photon Paint 2.0

Ease Of Use 10/15
Not the easiest program to get to grips with, though it has similarities to *DPaint*.

Speed 3/10
The program takes a long time to calculate things, and mapping onto objects takes quite a while.

Output 6/10
HAM pics always look nice on the printer, but these take forever to print out.

Graphics Handling 5/10
IFF HAM pics and HAM ANIMs. This is the only HAM animation package I can think of, and it deserves a boost for that.

Colour......................8/10
One of the few things it can do that really impressed me was a spread of colours in HAM, something hard to find in other HAM packages. It allows you to use 64 colours from this palette at one time.

Text Editing................3/5
Supports ColorFonts and a little bit of text editing. No anti-aliasing to speak of.

Tools........................7/10
The program has more tools than *Digi-Paint*, but they don't seem appropriate to a HAM package. Airbrushing is a waste where one pixel affects the one next to it, throwing all airbrushed pixels into relief.

Documentation.........4/10
Not my favourite manual, and set in a strange typeface which makes it hard on the eye. Not enough reference material and though there are copious tutorials and appendices, there is no index.

Price Value...............9/20
Should be closer to the price of *Digi-Paint* I think, then it would be value for money.

AMIGA SHOPPER.................................. 55/100

Not my favourite graphics package, mainly because I feel I'm wrestling with it all the time, and needs too much of a huge overpowered Amiga to get the full use out of it.

Streaming headlines

For £200, no matter what the application, reliability and high performance are essential. Jeff Walker checks out PageStream 2 to see if it has enough under its bonnet to keep up with the leaders



"I use the Amiga to publish my own magazine, so I know what features of a DTP program are the business and the kind of performance necessary for high-quality, professional results. Thus I can give you no-nonsense buying advice."
Jeff Walker

The full-colour, four-page brochure Soft-Logik hands out to advertise *PageStream* 2 is an impressive document to look at. Produced entirely with *PageStream*, it shows exactly what the program is capable of, and the words describe at some length many of the features *PageStream* has which its 'closest competitor' (*PPage*) hasn't.

PageStream's font support is possibly its strongest hand. It comes with no less than 18 different outline fonts, 10 of which are Compugraphic, the rest being Soft-Logik's own format. On top of this, *PageStream* supports Adobe Type 1 PostScript fonts, the kind used by Mac and PC desktop publishers. All of these can be output to ANY kind of printer. (Yes, that's right, *PageStream* can output PostScript fonts to dot-matrix printers.)

As well as Normal, there are 12 further text styles to choose from: Backslant and Italic, Bold and Light, Underline and Double Underline, Mirror and Upside-down, Outline, Shadow, Strike Through and Reverse (white on black).

> **"Despite numerous improvements, PageStream 2.1's lack of speed is still a millstone around its neck"**

Where font sizes are concerned, Soft-Logik has gone a bit potty. They can be anything from about 1/7200th of an inch (0.01pt) to about 100ft (183,000pt), adjustable in 0.01pt increments. These are silly figures. For a start, the best Linotron typesetting machine can't handle anything less than 1/2540th of an inch, but more to the point (little pun there) is the fact that the human eye can't define a 0.1pt difference, let alone 0.01pt. As for the 183,000pt maximum, I'd be willing to stake my teddy bear that nobody has ever actually printed a letter that tall. (If you know differently, please send it to me, c/o *Amiga Shopper*. Enclose a stamped, self-addressed juggernaut if you want it back.)

> **BLITS**
>
> *Commenting on new technology in newspaper design, former Sunday Times editor Harold Evans once said: "To be able to print a 32.5pt headline in purple in the shape of a bishop's mitre will not in itself be a notable advance in journalism." I dunno though …*
>
> **& BOBS**

I've experimented a lot with large point sizes, and the good old Guru knows a lot more about whether they work or not than I do.

Stick to sensible sizes and *PageStream* works just fine, as you would expect, so I suppose there's little point in knocking a potty feature if it actually does no harm. Provided you avoid using it, of course. But then if a feature is to all intents and purposes useless, and Gurus the machine when you try it, it's not really a feature, is it?

Game for a pasting

PageStream allows you to paste text on to the page in two different ways. First there's the normal technique of importing text into a number of linked boxes or columns, each of which can afterwards be moved or adjusted horizontally or vertically, and the text then re-formats itself to fit.

The second way is unique to *PageStream*. Any text typed directly on to the page gets treated as a graphic, or what *PageStream* calls an 'object'. This means you can manipulate it in ways usually reserved for pictures. You can stretch it both ways, for instance, which effectively creates a bastard point size – one that is not the same point size wide as it is high. Handy for fitting headings into holes. You can rotate, slant and twist it as well.

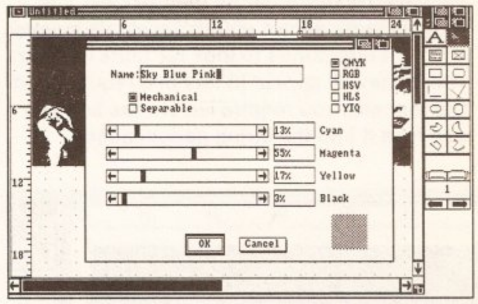
All the text formatting features you would expect from a professional desktop publisher are there – things like spell checking, hyphenation, kerning, paragraph indents and outdents. *PageStream* is without a doubt perfectly competent in the text and fonts department.

Streaming cold

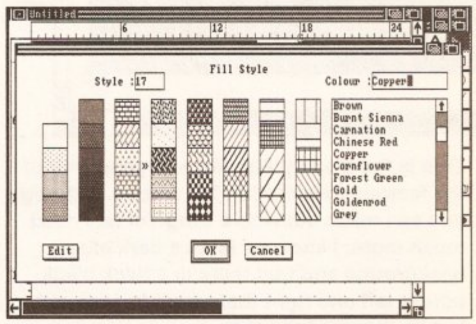
Where it begins to fall down is with the speed of its screen refresh rate. Or rather, the lack of it.

To begin with, *PageStream* will refresh the screen if you sneeze too hard – it really is quite annoying how often it does it – and because each refresh can take anything between 10 and 30 seconds, you tend to spend an awful lot of time tutting and drumming your fingers. Speed is a topic Soft-Logik left out of the *PageStream*

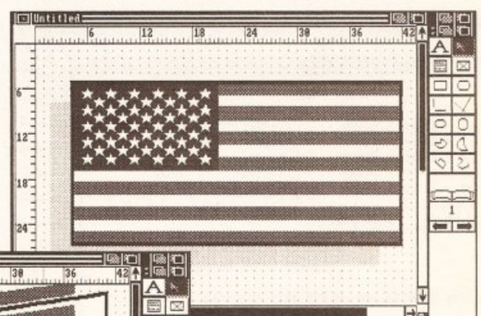
continued on page 40

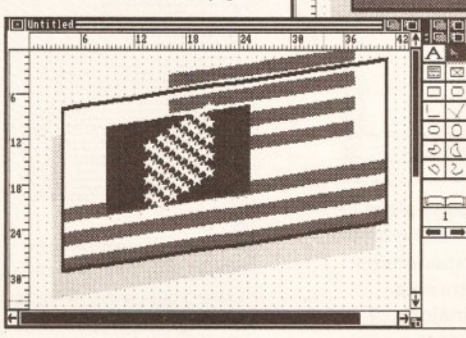


You can create any colour using the five colour systems and a dithered patch will show the approximate shade. But on-screen this patch is replaced by the closest of the 16 solid screen colours.

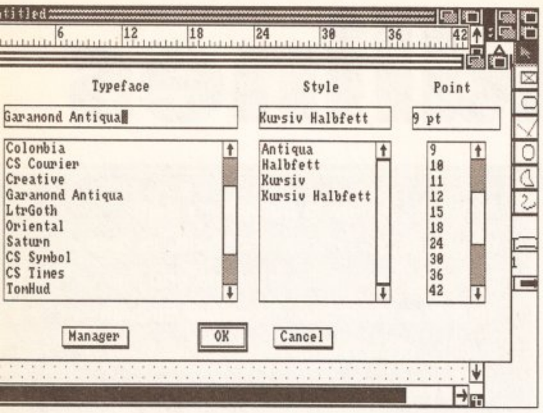


The selection of 40 pre-defined fill patterns is one of *PageStream*'s strong points, the icing on the cake being the editable one.

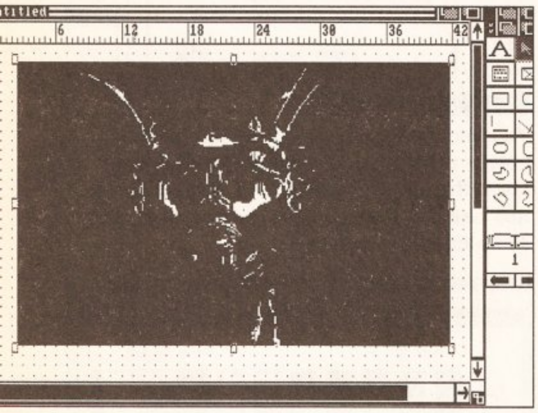




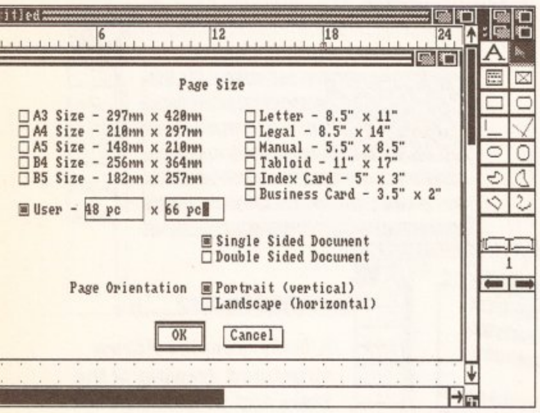
A fairly complex *PDraw* structured drawing of the Stars and Stripes (above) loads in almost perfectly; but close inspection reveals that the red stripes are poking out behind the black border on the right. Things start to go *really* wrong after the drawing has been twisted (left). *PageStream* has made a complete pig's ear of things. Our only option now is to re-load it and try again. Sometimes it works, mostly it doesn't.



The fonts requester is uncomplicated and easy to use. Compugraphic fonts are displayed with CS before their names. The font manager allows you to designate several different directories to look for fonts in, after which they all appear in this one requester. If the font size you require isn't in the list, you can type it into the string gadget above.



This is the display *PageStream* gives you of the famous *DPaint* King Tut screen. Although you can make out where King Tut is, I need much more: I know he is on a dark blue background and that there is a thick black border left and right that I want to crop out, but the border cannot be seen in this screen representation, so I'll have to do the cropping in *DPaint*.



A large selection of pre-set page sizes is available, which was good thinking on Soft-Logik's part because even experienced publishers sometimes have trouble remembering the exact dimensions of standard paper sizes. If you want a non-standard size, you can type it into the string gadgets using any of the many measurement units *PageStream* supports.

continued from page 39

brochure, so the company must know it is a problem, yet there is no facility for interrupting a screen refresh. The only help is adjustable greeking, where text under a certain on-screen point size gets displayed quickly as a fuzzy pattern.

Even with a 25MHz 68030 and 68882 maths co-processor inside the Amiga, the waits get tedious if for no other reason than it appears to be impossible to work for more than one minute without doing something that causes *PageStream* to refresh the screen.

While the refresh is happening you can do nothing, not even move the mouse pointer. To a programmer this is a dead give-away that a program is not properly using the multi-tasking capabilities of the Amiga. If you listen carefully you might even be able hear the phrase 'ST port' being muttered.

Piccy plethora

PageStream is almost as well-endowed in the graphics department as it is in the text department. The number of different graphics formats it can import is incredible – all IFF ILBMs (which includes HAM, SHAM, dynamic hi-res, dynamic lo-res and 24-bit), TIFF, *PDraw*, Mac and IBM EPS, EPSF, GEM Metafile, IMG, *Aegis Draw*, DR2D, *Degas*, *MacPaint* and *Neochrome*. If you don't actually recognise some of those names it's because they are alien formats from various other machines.

All of these graphics formats can be displayed on-screen and output to any printer, except for Encapsulated PostScript Format (EPSF), which can't be displayed and can only be output to a PostScript device.

> ***"PageStream has its own clutch of structured drawing tools for creating lines, curves, etc"***

Bitmaps are loaded in one of two ways. Either load the entire graphic as an object directly on to the page, or load it into a separate Picture Window, from which you can snip out the part you are interested in and then paste that on to the page.

Loading times differ, depending on what type of graphic it is you are importing, but a wait of two minutes while a HAM picture loads directly on to the page is not unusual. Single bitplane (black and white) IFFs take around 20 or 30 seconds.

No matter which mode you run *PageStream* in – 2, 4, 8 or 16 colours – all bitmap graphics are displayed on-screen in just two colours: black and white. No dithering is employed to try to get a better representation, so any bitmap that has more than two colours stands a 50-50 chance of looking so bad on-screen that precise cropping becomes almost impossible. Ok, this isn't a disaster; most IFFs you can crop in *DPaint* or something, but for the non-Amiga graphics formats, multi-coloured TIFFs for example, it's going to be a bit hit-and-miss.

To help speed things along, bitmaps can be replaced on-screen with a crossed-out box once they have been pasted into their final positions. But you can't choose which to X-out and which to display. It's either all the bitmaps in the document, or none.

Twisted picture

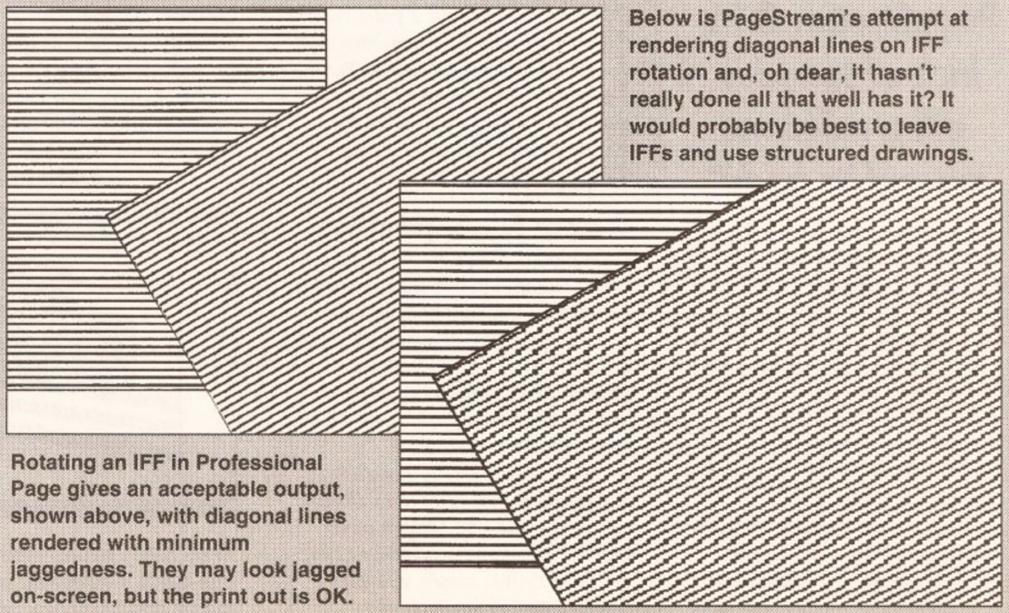
Once on the page, any graphic can be re-scaled, rotated, slanted and twisted, although my experiments with *PDraw* structured drawings have revealed that twisting them is disastrous; you end up with a cluttered mess.

> **BLITS**
>
> *The late Cyril Connolly, journalist and essayist, once observed: "As repressed sadists are supposed to become policemen or butchers, so those with an irrational fear of life become publishers." Um ...*
>
> **& BOBS**

The re-scaling of IFFs is not accurate enough to be of use to a professional desktop publisher. Graphics can be loaded in at what is supposed to be the original aspect ratio, but they are always slightly too long. Adjusting them to the correct ratio, which is a perfectly valid thing

continued on page 45

ROTATING IFF PICS CAN GET JOLLY JAGGY



Below is PageStream's attempt at rendering diagonal lines on IFF rotation and, oh dear, it hasn't really done all that well has it? It would probably be best to leave IFFs and use structured drawings.

Rotating an IFF in Professional Page gives an acceptable output, shown above, with diagonal lines rendered with minimum jaggedness. They may look jagged on-screen, but the print out is OK.

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DIGIVIEW GOLD V4	£95.00	TITLE PAGE	£109.00
LATTICE C V5.1	£149.00	PROFESSIONAL PAGE	£149.00
PAGESETTER V2, DTP	£47.00	VIDEO EFFECTS 3D	£109.00
PAGESTREAM, New Version 2.1	£139.00	X-CAD DESIGNER (1 Meg)	£69.00
PAGESTREAM FONTS	£22.00	X-CAD PROFESSIONAL	£229.00

CROSS-DOS, Multi-format file transfer	£23.00
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PEN PAL, Excellent Word Processor (1 Meg)	£69.00
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ALL IN ONE, Art package, Word Pro + Music package	£119.00
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As above but includes MNP5 error correction **£159.00**. New Supra 9600 Modem **£399.00** Supra 2400 Plus, MNP5 + V42 Bis **£189.00**

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16 BIT CENTRE

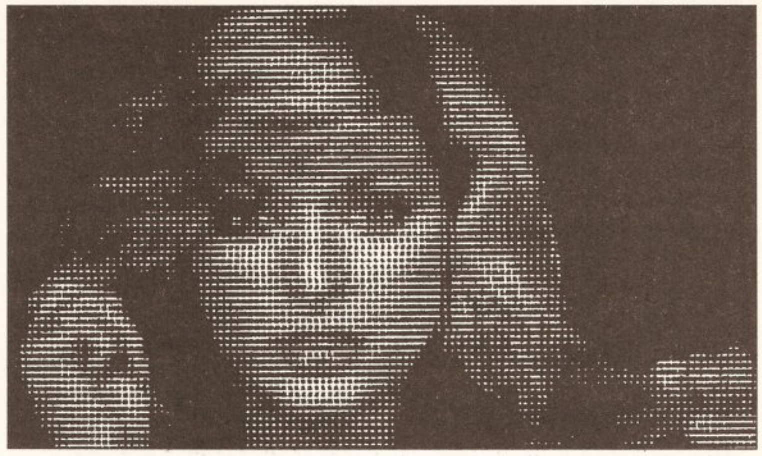
Units 15-17,
Lancashire Fittings Science Village
Claro Road, Harrogate HG1 4AF

Tel (0423) 531822/526322

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Access VISA





The above pictures show the difference that screen frequency makes. On the left we have output resolution screen frequency (360 lines per inch), which creates a stark image, while on the right the screen frequency has been adjusted to 45 lpi. Which particular frequency you use will depend on the nature of the graphic you have in mind, although 60 lpi is a good place to start, and is what *PageStream* appears to use as its default value.

continued from page 40

for a professional user to want to do, is a time-consuming, fiddly and very much hit-and-miss job.

IFF rotation is worse. While it is impossible to get an accurate representation of a rotated bitmap at screen resolution (about 70x70 dpi), there is no earthly reason why the final output should not be almost every bit as accurate as if you did the rotation by hand using traditional cut-and-paste methods. There are bound to be some small inaccuracies rotating IFFs, which are comparatively low resolution graphics, but see the rotation diagram on page 40 for an example of what *PageStream* produces in comparison to output from a program which does it properly.

Of course, these re-scaling and rotation problems totally disappear if you use structured drawings created with programs such as *Professional Draw* and *Aegis Draw*, or, to a limited extent *PageStream* itself, instead of bitmaps.

BLITS

The Amiga is crucial in the production of Amiga Shopper. Many of the screen shots you see are grabbed direct from the Amiga and the words you read are produced, in the main, on Amiga-based word processors.

& BOBS

Structured drawings are displayed in up to 16 colours, depending on which mode you start *PageStream* up in. These may not be the actual colours the drawings were painted with – in fact they almost certainly won't be. They are 'screen' colours which *PageStream* uses to represent 16 of the literally millions of colours available. There is no on-screen colour dithering, so creating multi-coloured documents can be a little tricky. Structured drawings are great for adding graphics to your work because no matter how much you mess around with them, you never get any jaggies.

> ***"A wait of two minutes while a HAM picture loads is not unusual."***

But the more complicated a structured drawing gets, the longer it takes to draw on-screen. So you need some way of speeding the rendering up, either by forcing drawings to appear with only the outlines on-screen (wireframe), or by X-ing them out completely once they are finished and in position. *PageStream* has neither of these options, so if your page has a couple of detailed structured drawings on it, when control is stolen from you while the screen gets refreshed, it can be a minute or more before you can get working again.

As well as import facilities, *PageStream* has its own clutch of structured drawing tools for creating lines, curves, boxes, ellipses and polygons. The lines can be any colour or thickness you desire, as can enclosed areas, plus you have 40 fill patterns to choose from for both lines and areas. If the pattern you want isn't among the 40 on offer, then you can simply create your own.

On the page

PageStream is one of those programs that uses its own custom printer drivers. (The *Protext* word processor is another example of the breed.) Currently, 57 drivers are distributed with the program, one of which is called Preferences.Printer, which means you can use your normal Preferences printer driver if you like.

For monochrome output, *PageStream* has built-in dither patterns to approximate colours, but there is only the one dithering mode, which appears to be halftone. All colours, including those in bitmaps, use this dither pattern for monochrome output.

PageStream handles grey shading (which is different from colouring something a shade of grey) by using 'screens' which, when they get output to the printer, are 16x16 arrays of small round dots – basically they are a special kind of fill pattern.

Adventures of tinting

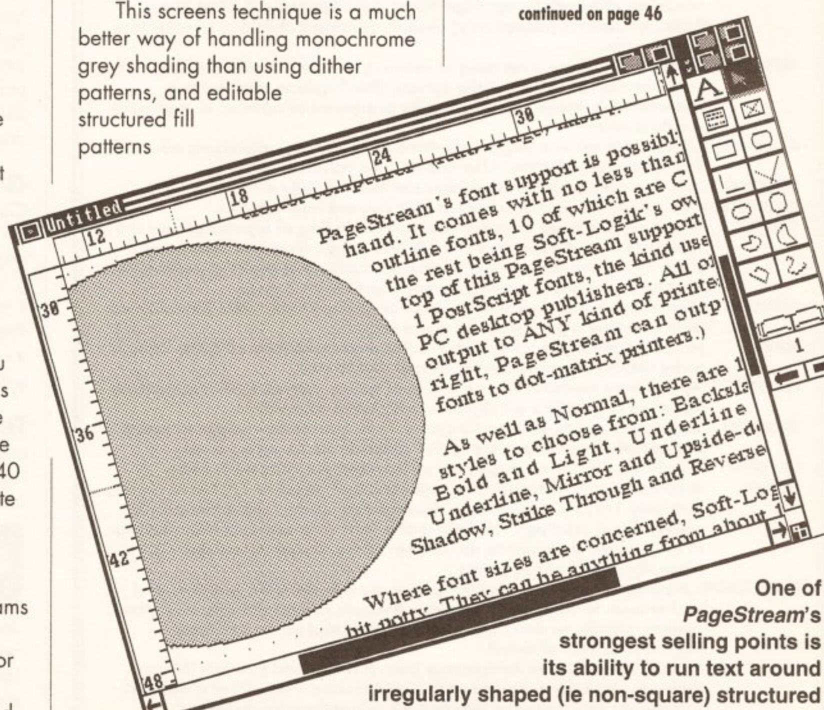
Seven different screens are provided, which approximate 10%, 25%, 40%, 50%, 65%, 80% and 90% tints of grey. However, there is an editable pattern if the screen you require is not in the list.

This screens technique is a much better way of handling monochrome grey shading than using dither patterns, and editable structured fill patterns is one area where *PageStream* walks all over its rivals.

A feature closely related to this is screen frequency (aka density), something normally only available via PostScript output. *PageStream*, however, can throw a user-definable screen over individual graphics and output it at that frequency to dot-matrix printers.

Normally, coloured graphics sent to monochrome dot-matrix printers will need screening at the reproduction stage – at the printers in other words – to prevent all the little black dots running into each other when the ink spreads on the paper. With *PageStream*, you can do this yourself. So, using a non-PostScript monochrome laser printer say, you could output all the text and structured line drawings at 300x300 dpi, but have the coloured graphics on the same page output at 60 lpi (lines per inch, which is

continued on page 46



One of *PageStream*'s strongest selling points is its ability to run text around irregularly shaped (ie non-square) structured drawings. However, it is important to realise that it cannot do the same with bitmapped graphics. In *PageStream*, they can never be anything else but square or rectangular objects.

continued from page 45

basically the same thing as saying 60x60 dpi). Colour graphics output as monochrome grey shades will reproduce much better at 60 lpi because there is more white space between the dots, so when the ink spreads there is less chance of those dots joining up to create large black areas where there should really be some subtle shades of grey.

> **"Structured drawings are great for adding graphics as you never get any jaggies"**

Although *PageStream*'s in-program colour support is poor, output to quality colour printers, like the QMS ColourScript 100 for example, is good. You have to bear in mind that with printers like this all the different colours are made up of dither patterns – a simple example is the colour orange, which will be an area of solid yellow overlaid with a clearly visible pattern of red dots. For this reason, HAM graphics, which have 4,096 colours, and 24-bit, which have 16.7 million, are not going to print as clearly as you would like them to unless expensive high resolution PostScript equipment is employed.

If you need PostScript output, there is a custom printer driver for just that purpose. Output can, naturally, be sent to disk, but *PageStream*'s PostScript features offer the absolute bare minimum and are not at all user-friendly.

Soft-Logik claims that *PageStream* is "the easiest, most intuitive DTP program for the Amiga". Now, if you've never used a professional-standard desktop publishing program before – something on the Mac or PC I mean, or even (dare I say it) *Professional Page* on the Amiga – then you'll have no problems getting to know *PageStream*. But it does a lot of things its own way, not the way professionals are used to, and more than one experienced DTP person has described using *PageStream* to me as a nightmare. From a personal point of view you can group me in with the experienced bunch.

Not so speedy

Despite the numerous enhancements, *PageStream* 2.1's lack of speed is still a millstone around its neck, and the package cannot begin to be taken seriously as a really professional DTP program until it is given comprehensive colour and PostScript support.

I would suggest that *PageStream* 2.1 is the ideal Amiga package for the amateur or hobbyist desktop publisher, except for the fact that it costs £200. I have seen it discounted to £140 in some places, but even at that price it is twice as much as *PageSetter* II which, although it doesn't support colour or PostScript, is more like the price a hobbyist would want to pay. AS

JARGON BUSTING

ASCENDER: The part of the letter that rises above the main body, as in the letter b.
BASELINE: The imaginary line upon which the bases of all letters without descenders sit.
BLEED: To extend type or illustrations outside the normal text area into the margins or to the very edge of the paper.
BODY TEXT: The main text of the document, excluding headlines.
FONT: The group of letters, numbers and special characters that comprise on variation of typeface, eg: 12pt Times, 12pt Times Bold, 12pt Times Italic. Sometimes (mistakenly) used in desktop publishing to refer to a type family.
BITPLANE/BITMAP: A bitplane is an area of memory where every binary bit corresponds to a pixel on the screen. One bitplane represents a monochrome image, several can be overlayed (a bitmap) to represent a colour image.
COCK-UP: Initial letter set in a larger type than the body text and rising above the surrounding letters. Also known as a raised capital.
COLUMN RULE: Line used to separate columns of text, usually a hairline.
CROPPING: Cutting out the part of a picture that you are interested in.
GUTTER: Originally the page margins next to the binding of a publication - the white space that separates the left-hand page from the right-hand page – the term is now used almost exclusively in desktop publishing to refer to the white space between columns on a page.
DITHERING: The juxtaposition in varying densities of black and white (or coloured) dots to create a grey scale (or more colours).
HAM: Hold And Modify is an Amiga graphic mode allowing all 4096 colours to be displayed at once, with certain restrictions.
HALFTONE: Any picture reproduced as a series of tones, such as a photograph, as opposed to graphics which are strictly black-and-white.
JAGGIES: The jagged edges seen on diagonal lines, caused by the use of small, but nonetheless finite, rectangular pixels to make up a picture.
LAYOUT: The design for the arrangement of text and graphics on a page.
POINT: A standard unit of typesetting measurement equal to 1/12th of a pica, precisely 1/72nd of an inch in desktop publishing (approximately in conventional printing). The height of a font - the distance from the top of the highest ascender to the bottom of the lowest descender - is normally expressed in points.
POSTSCRIPT: A powerful mathematical language used to describe graphics and text images to compatible printers. Because it does not rely on a pixel system, objects so described can be scaled and rotated without distortion or loss of detail.
24-BIT GRAPHICS: Normally, the Amiga uses between one and five bits (binary digits) to store the colour of each pixel (picture element) of a display. This means that between two and 32 colours can be displayed. Hardware add-ons are now becoming available which use 24 bits per pixel, giving a possible 16.7 million colours.

SHOPPING LIST

PageStream 2.1 .... £199.95
by Soft-Logik Publishing Corp,
11131 S Towne Square,
Suite F, St Louis, MO 63123
USA ☎ 0101 314 894 8608
or
Five Chancery Lane,
Clifford's Inn,
London EC4A 1BU

CHECKOUT

Pagestream 2.1

Ease of use 10/15
For a few months at least, the manual will be a constant companion. The menus are lengthy and cluttered and, although some Amiga-key short-cuts are available, only a few operations have been assigned to them, the rest being selected by Esc-key-key sequences, a feature which gives away the program's ST roots. Not one of the many requesters allows you to double-click an entry to select it, you always have to select OK. Bah!

Speed 2/10
Everything you want it to do quickly, *PageStream* does slowly, which cripples the creative juices. In 16-colour mode the speed of its user-interface is a constant frustration: pull-down menus grind on to the screen and you can see requesters building themselves. In two-colour mode it is a lot quicker, but nowhere near fast enough for professional use, even with a 68030/68882 (eg the Amiga 3000) calling the shots.

Output 7/10
Dot-matrix text output from the Compugraphic and Soft-Logik outline fonts is excellent, structured drawings and PostScript likewise. Rotated and re-scaled bitmap output is appalling by professional standards, although if you stick to upright bitmaps and scale them down a lot, you'll probably get by.

Graphics handling ..6/10
Clunky and inaccurate, made up for by the fact that *PageStream* can import, display and output a large range of graphics formats. Trying to view an IFF at 1500% magnification always sends my 7Mb B2000 (1Mb chip) to sleep. Ok, so it's a silly thing to want to do, but if the option is available, it should work.

Text editing 4/5
I can't imagine anyone actually using *PageStream*'s built-in text editor and spelling checker for preparing text – it will be a lot faster to use a dedicated word processor and import the text in a finished state. But it's there if you want it, and it works, although the spell checker has Gurued on me once or twice.

Colour 2/10
Full Amiga 4,096 RGB palette, 100 million YMCK palette, but only 16 colours can be represented on-screen. Three or four-colour separation is available, but the output density and dot angle of the yellow, magenta, cyan and black colour components cannot be adjusted individually, which could cause some problems with interference patterns in documents that feature HAM and 24-bit graphics.

Tools 9/10
Soft-Logik has taken great pains to include every single feature you could ever wish for, and it's fair to say that *PageStream* has one or two tools that some top-line professional DTP programs on the PC and Mac could also do with. But alas, the handful of extremely powerful tools only work for half of the time; in the main they tend to produce unreliable results or Gurus. But the vast majority of the tools at your disposal work very well.

Documentation 7/10
As well as the user manual there is a QuickStart manual for beginners. Both are clearly written and well presented, though unfortunately the user manual lacks a chapter on typography and page design and does not include nearly enough technical information about PostScript and colour.

Price value............ 11/20
If *PageStream* was truly a professional DTP program, then £200 (discounted to £140 in places) would be a really good bargain. But it is just not up to professional standards and therefore its value for money is poor when it is compared to other hobbyist DTP programs, such *PageSetter* II.

AMIGA SHOPPER 58/100

Most of my criticisms of *PageStream* 2.1 are based on professional considerations, which may seem like nit-picking to a hobbyist. I can name umpteen people who have told me they prefer *PageStream* 2.1 to *Professional Page* 2, but not one of them is experienced in desktop publishing. This only serves to confirm my conclusion that *PageStream* is by no means a professional-standard program. However, non-professionals may find it much easier to learn and understand.

BB King

> "As a professional COMMS user, I've clocked up more than 300 hours on loads of bulletin boards. I'll show you how to get value for money and maximum fun from the exciting world of COMMS."
> **Stewart C Russell**

Stewart C Russell describes the joy of having your machine shriek at another over a telephone line and just how to go about setting it up

Getting hooked up to bulletin board opens up a new world of fun and games. You can interact with other computer users the country over, swapping messages, software and all kinds of useful information. However, many folks tend to go '!' at the mention of a modem and '?' when baud, bis and British Telecom are broached.

So, without further ado, here's the *Amiga Shopper* guide to getting into, about and out of this exciting realm of computer chatter.

First off, you'll need a computer. I 'd recommend a Commodore Amiga. But then you knew that, didn't you?

In the mode

Another damn useful piece of kit is a modem. It turns your data into something the phone lines can handle. There are two types of modem – manual and automatic. Manual modems are cheap (pay no more than about £50), very slow (300 bps, or 30 cps) and require a telephone alongside to do the

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JARGON BUSTING

BBS: Bulletin Board System. The name comes from the American college bulletin board (the cork and drawing pins type) which is a traditional meeting and trading place.

BPS: Bits per Second. The number of data bits sent down a line in one second.

CPS: Characters per Second. Since there are usually 10 bits per character in asynchronous comms, the cps figure is usually one-tenth the bps figure. With data compressing modems (those with MNP level 5 or greater) the bps/cps ratio is often higher, as more data is packed into the same number of bits.

DOWNLOADING: Receiving data from a bulletin board.

ECHO: A Fidonet public message area. Queries, comments, complaints, statements and plain trash from your area just waiting to be read and replied to.

FIDONET: A network of bulletin boards spanning the globe. The day's Echo messages from one bulletin board are bundled together and sent to other boards late at night.

HAYES: A company that devised the standard command set for automatic modems and makes solid but pricey modems to this day. Hayes commands are sometimes called AT commands, as every command is preceded with the letters 'AT'

LINE NOISE: Random bursts of spurious characters caused by natural happenings in the phone line. Virtually unknown at low data transfer rates.

MNP: Microcom Network Protection is the most common error correction system for modems. MNP level 2 corrects errors by re-transmitting bad data blocks, levels 3 and 4 try to regain the speed lost by MNP 2 by reorganising the data, and levels 5 to 10 compress and repackage the data for maximum throughput.

OFF-LINE MESSAGE READER: A program that allows you to quote from, reply to and compose messages once you've disconnected from the board and don't have phone charges to worry about. The next time you log on, you can upload all your messages in one go. Not for neophyte comms people.

ONLINE TIME: The amount of time per day that you can use the board. Unregistered users have limited online time but registering often gives unlimited online time and downloads.

TROUGHING: The nasty practice of always downloading and never uploading. A very bad habit.

SCROLLING BBS: Uses 80x25 screen format, which scrolls as data is received. Simplest form uses no special control codes. ANSI graphics give 8-colour line and block graphics. The most common type of BBS.

SYSOP: System Operator of a bulletin board. Generally a 'salt of the Earth' character who provides a BBS as a hobby, and not for profit. Hug a Sysop today (well, metaphorically, at least).

UPLOADING: sending data to a bulletin board

VIEWDATA BBS: Uses 40x25 paged *Teletext* format. Not very common on the Amiga scene since the traditional Viewdata (v23, 1200/75 bps) baud rate is not easily supported by the Amiga. A peculiarly European phenomenon.

KEEP IT COMMING

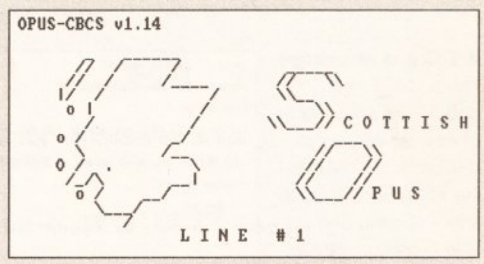
Scottish Opus is my local bulletin board. Even though it's not an Amiga board, you have to go through pretty much the same sequence to start off on any BBS.

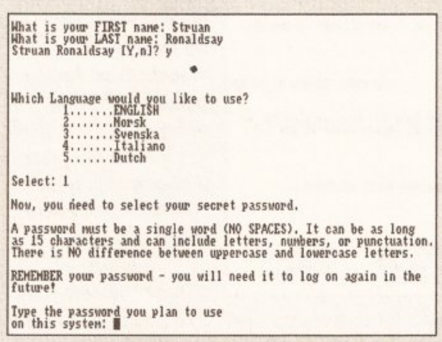
I logged on under an assumed name (a bad thing to do, but I did have the sysop's permission) to demonstrate just what a new user can expect to see.



1 Dialling – *NComm*'s telling the modem to dial the number, and wait for an answering carrier tone. Here I'm running 1200 bps, 8 bits per character, no parity checking, and one stop bit per character; a reliable setting to try any new board. If your comms package supports it, enable ANSI (or IBM) characters if you want some slightly more interesting displays.

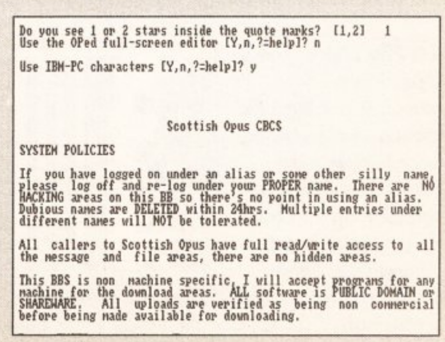
2 Connected – Straight on, first time; if you pick your time right (like 4.19pm on a Saturday), you'll walk right in. The wrong time (say 9.30pm on a weekday) and you might spend half an hour trying. Connecting is the most difficult part; once you're in, the worst you'll be asked is a few questions. Some boards require you to press [Esc] twice; if you know you are connected but aren't getting anywhere, tap [Enter] a couple of times to wake the board up. The 'CAP' at the bottom of the screen shows that I've started to spool the session to disk. Text at 1200 bps is just at the edge of comfortable reading, any faster and it becomes virtually impossible. Don't worry, all boards page the screen so you will have time to read what is going by.





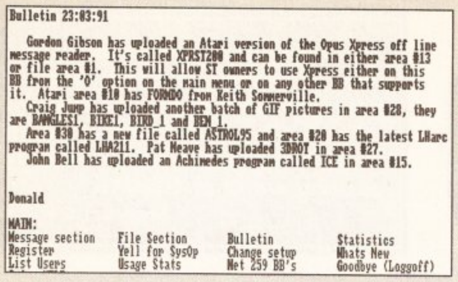
3 New User – Everyone gets asked their name before being given access to the board. Scottish Opus doesn't know of a 'Struan Ronaldsay', so starts asking questions. Choose a password (make sure it's a different one for every board you use). And I'm in, this time for real.

4 Policies – After being asked a few more questions about IBM/ANSI characters, you get the bulletin board's policy statement. The sysop expects good behaviour and general abiding of laws. You would be wise to respect these policies; many a law-abiding sysop has shut down in disgust at the conduct of a few entirely inconsiderate users.



continued on page 48

continued from page 47



```
Bulletin 23:03:91

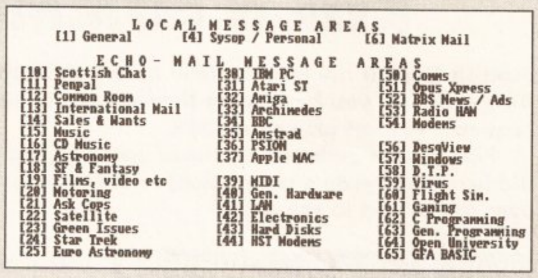
   Gordon Gibson has uploaded an Atari version of the Opus Xpress off line
message reader.  It's called XPRST200 and can be found in either area #13
or file area #1.  This will allow ST owners to use Xpress either on this
BB from the 'O' option on the main menu or on any other BB that supports
it.  Atari area #10 has FORMDO from Keith Sommerville.
   Craig Jump has uploaded another batch of GIF pictures in area #28, they
are BANGLES1, BIKE1, BIRD_1 and BEM_1.
   Area #30 has a new file called ASTROL95 and area #20 has the latest LHarc
program called LHA211.  Pat Meave has uploaded 3DROT in area #27.
   John Bell has uploaded an Achimedes program called ICE in area #15.


Donald

MAIN:
Message section   File Section     Bulletin         Statistics
Register          Yell for SysOp   Change setup     Whats New
List Users        Usage Stats      Net 259 BB's     Goodbye (Loggoff)
```

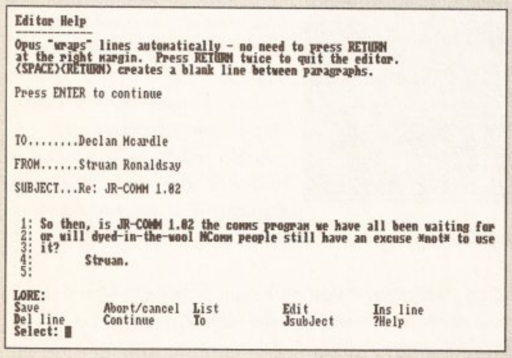
5 Main Menu – After the Quote of the Day and the day's news bulletin, we get to the Main Menu. I could Register, gaining longer online time in exchange for my name, address and telephone number. The bold character set is a trick that ANSI graphics can perform.

6 Message areas – M is for Message Section. So many different Fidonet areas, but the one I'm after is area 32 on this board – the Amiga Europe echo.



```
             L O C A L  M E S S A G E  A R E A S
     [1] General         [4] Sysop / Personal       [6] Matrix Mail

          E C H O -  M A I L  M E S S A G E  A R E A S
[10] Scottish Chat             [30] IBM PC              [50] Comms
[11] Penpal                    [31] Atari ST            [51] Opus Xpress
[12] Common Room               [32] Amiga               [52] BBS News / Ads
[13] International Mail        [33] Archimedes          [53] Radio HAM
[14] Sales & Wants             [34] BBC                 [54] Modems
[15] Music                     [35] Amstrad
[16] CD Music                  [36] PSION               [56] DesqView
[17] Astronomy                 [37] Apple MAC           [57] Windows
[18] SF & Fantasy                                       [58] D.T.P.
[19] Films, video etc          [39] MIDI                [59] Virus
[20] Motoring                  [40] Gen. Hardware       [60] Flight Sim.
[21] Ask Cops                  [41] LAN                 [61] Gaming
[22] Satellite                 [42] Electronics         [62] C Programming
[23] Green Issues              [43] Hard Disks          [63] Gen. Programming
[24] Star Trek                 [44] HST Modems          [64] Open University
[25] Euro Astronomy                                     [65] GFA BASIC
```



```
Editor Help
-----------
Opus "wraps" lines automatically - no need to press RETURN
at the right margin.  Press RETURN twice to quit the editor.
<SPACE><RETURN> creates a blank line between paragraphs.

Press ENTER to continue


TO........Declan Mcardle

FROM......Struan Ronaldsay

SUBJECT...Re: JR-COMM 1.02

 1: So then, is JR-COMM 1.02 the comms program we have all been waiting for
 2: or will dyed-in-the-wool NComm people still have an excuse *not* to use
 3: it?
 4:        Struan.
 5:

LORE:
Save          Abort/cancel  List       Edit       Ins line
Del line      Continue      To         JsubJect   ?Help
Select: █
```

7 A Typical Message – Here's a reply to someone's memory problems. The sender has used an off-line message reader to quote from the original and build up a reply. The Origin line shows where it came from – Declan's BBS in Dublin, Eire.

8 Take a Message There was some debate over the merits of newest version of *JR-Comm*, so I wanted the truth. Should I stay with *NComm* and its little quirks, or go to *JR-Comm* and get thoroughly confused?



```
From:     Declan Mcardle
To:       Johan Moes                          Msg #144, 27-Mar-91 23:20:5
Subject: Re: RAM-SIMULATOR!!!!

Dear Johan,

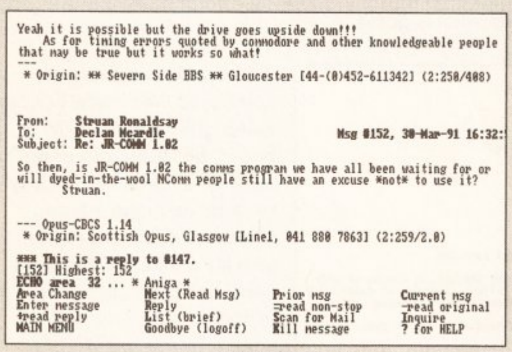
let me quote your message of (22 Mar 91  15:02:56)
about (Re: RAM-SIMULATOR!!!!), where you write:

 JM> Why do you need memory at $200000? To run KickStart 2.0?

Because you do!

:-) Declan.
--- GCCed v3.5c / Trapdoor
 * Origin: Amiga, why compromise? DecBBS +353-1-882454 (2:253/198)


[144] Highest: 151.
Press Enter for NEXT msg.
ECHO area  32 ... * Amiga *
Area Change        Next (Read Msg)    Prior msg          Current msg
Enter message      Reply              =read non-stop     -read original
+read reply        List (brief)       Scan for Mail      Inquire
MAIN MENU          Goodbye (logoff)   Kill message       ? for HELP
```



```
Yeah it is possible but the drive goes upside down!!!
    As for timing errors quoted by commodore and other knowledgeable people
that may be true but it works so what!
---
 * Origin: ** Severn Side BBS ** Gloucester [44-(0)452-611342] (2:250/408)


From:     Struan Ronaldsay
To:       Declan Mcardle                      Msg #152, 30-Mar-91 16:32:
Subject: Re: JR-COMM 1.02

So then, is JR-COMM 1.02 the comms program we have all been waiting for or
will dyed-in-the-wool NComm people still have an excuse *not* to use it?
        Struan.

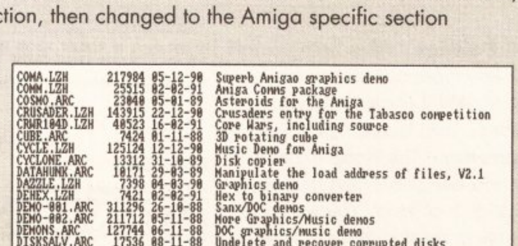

--- Opus-CBCS 1.14
 * Origin: Scottish Opus, Glasgow [Line1, 041 880 7863] (2:259/2.0)

*** This is a reply to #147.
[152] Highest: 152
ECHO area  32 ... * Amiga *
Area Change        Next (Read Msg)    Prior msg          Current msg
Enter message      Reply              =read non-stop     -read original
+read reply        List (brief)       Scan for Mail      Inquire
MAIN MENU          Goodbye (logoff)   Kill message       ? for HELP
```

9 There's an Echo in here – And there's my message, as it will be seen by the thousands of Amiga people in Europe within a few days. All this for just the price of a phone call. More Files than you could shake a stick at

This was a different session from the last one, as observant folks will notice from the clock. From the Main Menu, I've gone to the File section, then changed to the Amiga specific section

10 File List – Scottish Opus has a reasonable Amiga file section; Amiga based boards have more. Files are archived for safekeeping and faster downloading; each different archiving program gives a different filename extension – *Arc* gives *.ARC, *Zoo*, not surprisingly, *.ZOO, and the newer *Lharc* generates *.LZH archives. You'll need the right archive program for the job – they are not intercompatible.



```
COMA.LZH       217984 05-12-90  Superb Amigao graphics demo
COMM.LZH        25515 02-02-91  Amiga Comms package
COSMO.ARC       23040 05-01-89  Asteroids for the Amiga
CRUSADER.LZH   143915 22-12-90  Crusaders entry for the Tabasco competition
CRWR104D.LZH    40523 16-02-91  Core Wars, including source
CUBE.ARC         7424 01-11-88  3D rotating cube
CYCLE.LZH      125124 12-12-90  Music Demo for Amiga
CYCLONE.ARC     13312 31-10-89  Disk copier
DATAHUNK.ARC    10171 29-03-89  Manipulate the load address of files, V2.1
DAZZLE.LZH       7398 04-03-90  Graphics demo
DEHEX.LZH        7421 02-02-91  Hex to binary converter
DEMO-001.ARC   311296 26-10-88  Sanx/DOC demos
DEMO-002.ARC   211712 05-11-88  More Graphics/Music demos
DEMONS.ARC     127744 06-11-88  DOC graphics/music demo
DISKSALV.ARC    17536 08-11-88  Undelete and recover corrupted disks
DK.LZH           7987 04-03-90  Snow!
DMOUSE.ARC      13440 16-02-89  Drunken mouse, has a strange effect on mouse!
DMOUSE2.ARC     18560 25-02-89  Mouse utility, reverse of Rat-Trap for ST
```

continued on page 53

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dialling. You dial up a BBS, wait for the carrier tone, hit the Connect button, put the phone back on the hook and you should be connected. They are reliable, but no use for downloading or uploading software due to extreme lack of speed.

Automatic modems range from around £100 for the very slowest to well over £1000 for top line machines. These machines will dial for you and can be set up through software, not by pushing buttons on the modem. They mostly use the Hayes command set to talk to the computer and most comms software is preset to use these commands.

You pays yer money

The more you pay, the faster a modem you get, and the less you'll have to pay BT to receive the same amount of data. A v22 modem (1200 bps) is fine for calling local boards for mail and small uploads/downloads. 2400 bps (v22bis) modems bring more flexibility, but suffer from line noise unless precautions are taken. Expect to pay over £200 for a v22bis modem, which will include the v21 (300 bps) and v22 standards.

The 9600 bps scene is a bit more confused; there are two incompatible standards, HST and v32, and either machine will set you back over £500. You have to be pretty serious to throw that sort of money about, but then an extra £200 on top will get you a modem capable of both standards.

Error-correcting modems are a subset of the automatic market. These use special protocols at both ends of the telephone line to reduce the effects of line noise. More advanced error correcting modems can compress the data by up to 50% before sending. Expect to pay around £300 for a data-compressing, error-correcting v22bis MNP 5 modem – capable of putting text down a good phone line at around 480 cps.

BT Approval might add a lot to the price of a modem, but it also removes the slight possibility of falling out with a company that in no way monopolises the market; it's just that you can't make local calls without them unless you live in Hull.

Unless you've got a Bridgeboard, you'll need an external modem; internal devices go inside PCs. You'll probably get a modem that can do v23 (1200/75 bps) along with other speeds. Amigas and PCs aren't good at 1200/75 split baud rate, so unless you get deeply into Viewdata BBSs, you'll probably never use it.

You'll also need a cable: a small thing, but much angst can be saved by ensuring that all the lines you need are connected between the computer and modem. Don't use a cable where all 25 lines are connected straight through either; a weirdness in the wiring of the Amiga's serial port means that you could damage your computer with such a cable.

If you don't want to build your own cables, wander along to a reputable supplier and say you want a cable to connect an Amiga (state model) to a Hayes-compatible modem. If they don't know what you're talking about, they don't deserve your custom.

Attack of the Tomato-Flavoured BBS

A sysop of a small BBS called me up and virtually demanded a mention. When I say a small BBS, I mean it – it runs on a twin floppy A500. It's colourful (ANSI graphics everywhere), and nicely presented. It's called The Tomato Flavoured BBS, it's on ☎ 081 560 6251, and supports up to v22bis.

The only drawback is that TFBBS is only on-line from 10.30pm – 5.30pm; the sysop uses the phone for other things in the evening (oh yus?). Give it a call if it's local, but don't you dare call outside the recommended times, okay?

Going soft

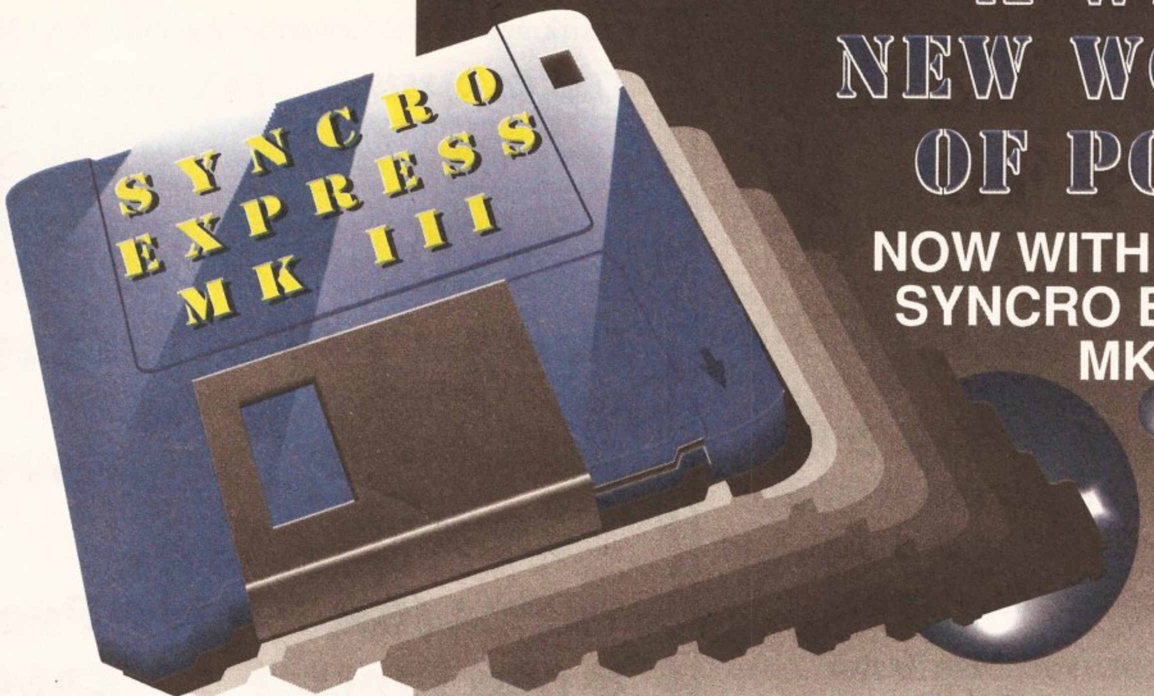
As for any task involving your computer, you'll need the appropriate software. Comms software is a very personal thing, and the only way to find one you like is by trying them all. This isn't as expensive as it sounds, as all the best comms software is shareware.

Here are the features to look for:

- ASCII Capture/Send – ASCII Capture allows you to browse through your BBS session once you've logged off, and possibly compose replies for the next time you log on. ASCII Send tips a prepared text file down the line so your messages are spelled properly.
- Online timer – It tells you how long you've been on the phone. Clever software keeps a log of all calls, and the really clever stuff estimates the phone bill from your call log.
- Phonebook – Stores the names, telephone numbers and baud rates of all your favourite bulletin boards and dials them at a mouse click. Of absolutely no use whatsoever to manual modem users.
- XModem and ZModem File Transfer Protocols – You can't just

continued on page 53

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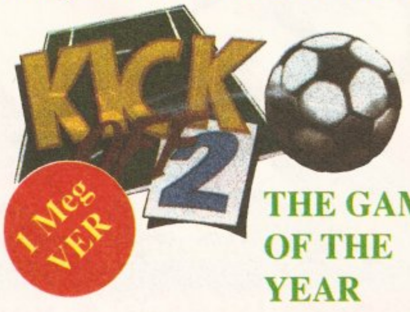
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send a binary file down a telephone line and expect it to come out the other end unscathed. Some method of error checking has to be used so you can re-transmit the corrupted bits. One of the oldest protocols is XModem; it sends checkup data every 128 bytes. It's quite slow, but there isn't a BBS in the universe that doesn't support it. The current protocol of choice is ZModem. Data is initially sent in 1K packets, but if errors occur, the packet size is halved (down to a limit of 64 bytes) until a successful transmission is made. Zmodem can even restart from where an aborted transmission left off; it's a very flexible and fast protocol which is nearly universally accepted these days.

- ANSI Graphics – 8 colour character graphics, originally used by DEC and IBM. Simple pictures and animations can be built up by sending long strings of control codes. It's pretty, but tends to be rather slow at 1200 bps or less.

If you're stuck for what to buy, here's a selection of nifty comms programs that should get you started.

AZComm 1.0
(Fish Disk 171)

This little public domain package is really old and primitive looking; it doesn't support ANSI graphics, it has no online timer and it doesn't take advantage of a PAL screen. But what it does have is the minimum acceptable number of features in the smallest possible space. It has ASCII Capture/Send, reliable XModem and ZModem file transfer protocols, and a simple phone book.

JR-Comm 1.01

If *JRComm* doesn't support it, it doesn't exist. Every single nuance of every possible feature has been thought of, to the extreme detriment of ease of use. This piece of shareware is well supported and widely used. The distributable version has delay screens built in; the registered version does not (costs around US $40).

NComm 1.9
(Fish Disk 356)

Sharing the same roots as *AZComm*, *NComm* 1.9 has all the features you could ever wish for, is reasonably easy to use, but is only passably reliable. It's my terminal of choice, and is being upgraded at this very moment. This one is giftware – you send the authors a gift of what you think the program is worth to you.

Finally, and fairly importantly, you'll need a telephone line. If you are on a big budget, get one installed just for your modem. This saves temper tantrums when some innocent picks up the phone when you are 99 per cent through a 300K download. AS

UK Bulletin Boards

While by no means an exhaustive list, here are a few BBSs to get you started:

England

North East – Grimsby
Code-o-matic...................... ☎ 0472 360811

North West – Carlisle
Scorpion's Nest.................. ☎ 0228 26478

Midlands – Birmingham
The Plug-Ole .... ☎ 021 472 0256

South East – Cheam
Cheam Amiga BBS .... ☎ 081 644 8714

South West – Gloucester
Severn Side BBS .... ☎ 0452 611342

Severn Side isn't Amiga specific, but is a well established board and consequently a good source of information about local boards.

Scotland

Scottish Opus, Glasgow.. ☎ 041-880 7863

Although Scottish Opus runs on a PC, it's a big and busy board with a quite reasonable Amiga file section and good connections to almost everywhere else.

Wales

Public House BBS, Cardiff ☎ 0222 221168

Public House runs a subscription scheme at £10 a year which gives users longer access times and £2 of 'free' Fidonet mail credits.

Northern Ireland

No luck here; all the numbers I had were out of date. You could try giving DecBBS a bell across the border to find out what's going down in your locale.

Eire

DecBBS, Dublin....... ☎ 010 353 1 882454

A seriously neat board. The sysop Declan McArdle is a mine of useful information on all things Amiga in the Emerald Isle.

Shopping List

Modems come in many shapes and sizes. Expect the following prices:

Manual:	300 bps	@£50
Automatic:	1200 bps	@£100
	2400 bps	£200 and up
	9600 bps	£500 and up

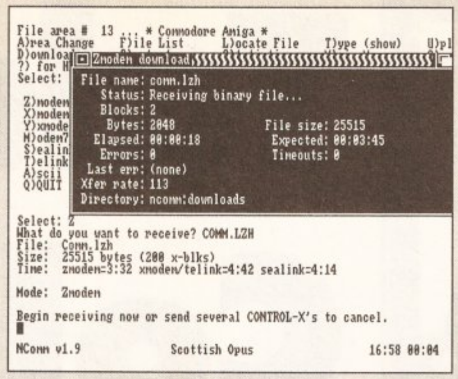
Look out for a major comparison test feature in Amiga Shopper issue 6, on sale September 5.

Hayes-compatible cable @£10

Software:
There's plenty available in PD land. See 'Going soft' for some good starters.

Good connections:
British Telecom offers the biggest telephone network, but Mercury is about 20-25 per cent cheaper and has better line quality. However, you can't make local calls with Mercury and you need a tone-dialling phone with at least one permanent number memory.
For up-to-date call charges, contact:
Telecom – ☎ 100 and ask for Customer Services
Mercury – ☎ 0800 424193

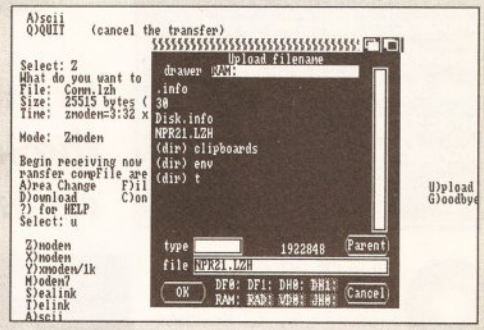
Above all, for all the above, shop around.

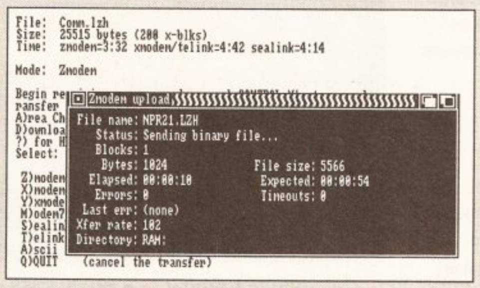


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11 Downloading – I decided to go for *COMM.LZH*, the original and basic Amiga comms package (the ancestor of both *AZComm* and *NComm*). Considering I'm only logged on at 1200 bps (giving a theoretical transfer rate of 120 cps) the ZModem protocol is giving me a respectable 113 cps error-free transmission.

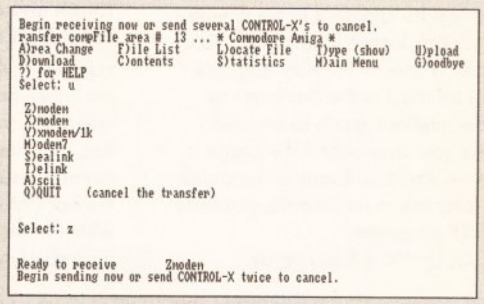
12 An Upload a day keeps the Sysop at bay – Not quite, but uploads keep a BBS fresh and usable. I've got a little program archived and waiting in RAM: to be ZModemed down the line. I know the board doesn't have it, because I wrote the program.

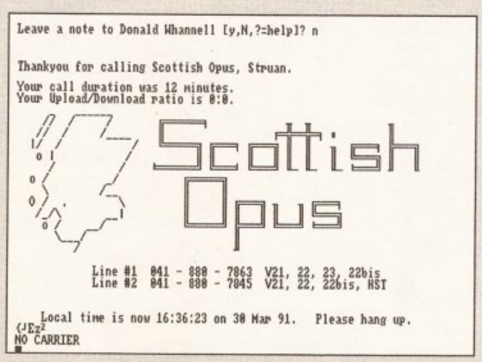




13 Uploading in progress – do not disturb – It's going down the line at a reasonable rate, and as the archive is a smidgen over 5K long, the process will all be over in under a minute.

14 Describe the Upload to me, Sir – It's precis time – describe your upload accurately in under forty characters. My little archive does only one specific thing (resets the machine if the old PAL/NTSC Reset bug occurs) so describing it is relatively easy.





15 Logoff – Struan's seen all he wants to see, and hits Goodbye at the menu. He doesn't want to say anything to Donald the sysop (though a "Hi, Nice board" wouldn't go amiss) so the board goes through its IBM character set goodbye sequence. A few characters of line noise squeeze their way through before the modem has a chance to say NO CARRIER, in the inimitable way that only Hayes compatible modems can. The phone line has been dropped, and can now be used by other people.

So long, and thanks for all the files

The two sessions shown above took seven units of telephone time at a cost of about 36p. That included a great deal of time spent grabbing screens, so it shows that calling a local board is not at all expensive.

Many thanks are extended to Donald Whannell of Scottish Opus BBS for his kind co-operation in compiling this article.



"The Amiga quite rightly has the reputation of being *the* computer for low-cost graphics applications. I'll show you how to get the best from all the hard and software in this fast-growing field of activity."
Phil South

Take your ColourPic

In this month's graphics column Phil South explains the ins and outs of video digitising and reviews the recently down-in-price ColourPic digitiser from JCL

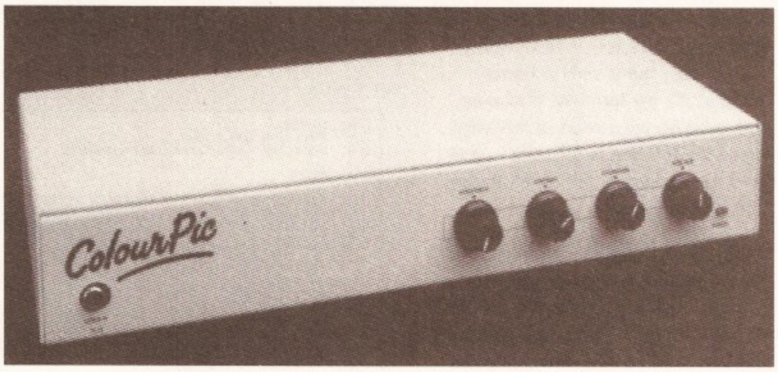
One of the great top-of-the-range digitisers, ColourPic by JCL Business Systems, has just come down in price, so it seems like a good opportunity to do a full review of this very sophisticated and powerful piece of hardware.

What is it?

ColourPic is a real-time colour digitiser. What that means is that you can watch a TV picture through it and when you bang a key on the Amiga keyboard the picture freezes and can be captured in the Amiga's IFF picture format in any resolution. (Note: a special memory upgrade must be fitted to the basic unit to allow interlace mode to be used.) Once you've grabbed the image it can be saved to floppy or hard disk for later use in multimedia, graphics or DTP programs.

ColourPic is fixed up by connecting the lead to the parallel port, then putting a lead from the video out on your video to the video line in on the ColourPic. You can also connect another monitor or TV set to the back of the ColourPic to see which frame you've grabbed. This isn't absolutely necessary, although it's so simple to rig I can't see why you wouldn't do it. The device comes with a disk containing the driver software – a simple menu driven interface allowing you view, grab and select resolutions.

The basic process involves freezing a picture in the frame-store part of the machine, then setting the digitiser part off which scans the picture into memory as separate RGB components and assembles them together as an IFF file which it displays on screen. You can then save the grabbed picture to disk, or grab it again if the image isn't quite what is required.

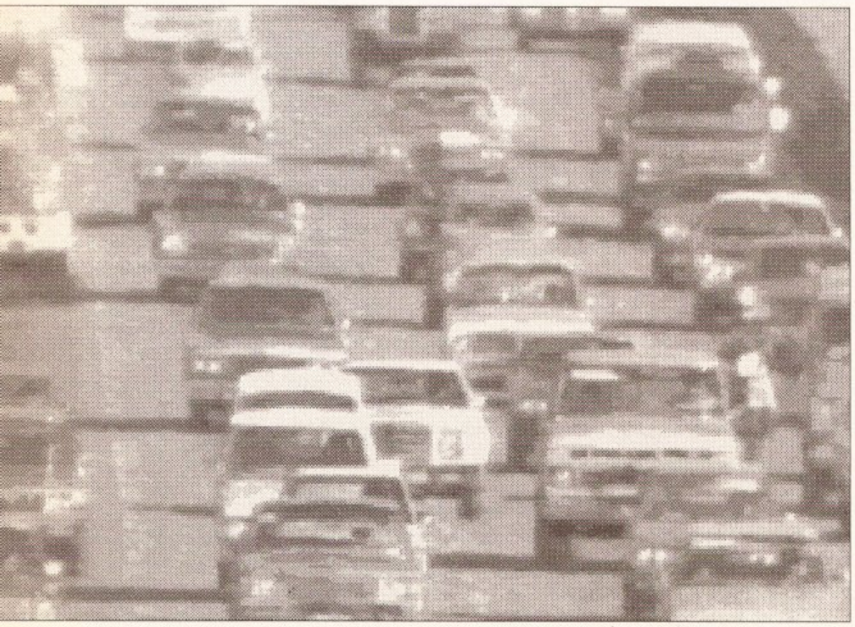


ColorPic is housed in a plain, light artillery-proof metal box – more than tough enough to withstand the slings and arrows of an outraged Snouty, though he calmed down quite a lot when he found out how good it was.

Big lump of HAM

The machine works with a minimum of 1 Mb of RAM, which isn't surprising considering that HAM pictures take up so much space.

You begin by making a copy of the master disk and then running the system from the copy. There were no instructions on how to install the software on hard disk in the manual, though this shouldn't be a problem to a user of reasonable intelligence. Simply create a directory with the same name as the disk, copy all the files into it, then assign the directory to the same name as the disk. (Note:



This fine, if congested, example of an image grabbed from video with ColourPic demonstrates the pressing need for people to use buses.

BEGINNERS START HERE

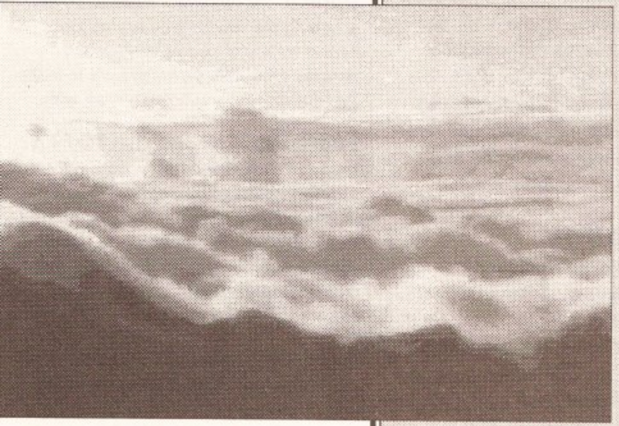
The Amiga is a very special computer. No other machine has the same creative edge, and no other has the same possibilities for creative graphics processing. So one of the most entertaining things to do with graphics on the Amiga is digitising. This means you take a real-world graphic, such as a photo or artwork, and digitise it, which means turning it into digits in the computer's memory. Once in memory, it can be displayed on screen in whatever graphics standard the computer employs. The picture is scanned in one line at a time and the colours or shades of the original are turned into bits on the screen, so what you have is a bitmapped version of the original thing. It's just electronic photocopying really.

Once you have the screen in the memory of your computer, it can be saved to disk, or loaded back into a painting program for touching up or adjustment. Finally, it can be pasted into a DTP document, or just printed out. Digitised graphics can also form the basis of your artwork by giving you very clear outlines to draw from.

So how can you buy a digitiser and how can you get the best from it? See the *Good digitising guide* opposite.

this process works for almost all programs unless the programmer does something really silly, such as making reference to something that isn't on the system, like DH2:, WORK: or even DF1: – particularly annoying if you use an A-Max II Emulator like I do.

Once you have connected a monitor or TV to the ColourPic the picture that is going through it can be adjusted with the Brightness, Contrast, Saturation and Hue knobs on the front of the unit. These enable you to get the best image possible, given the lighting conditions of your camera or the video you are grabbing from. Once you have the picture set up, the picture can be frozen by pressing the Z key on the keyboard. Once frozen in the memory of the ColourPic, the picture can be imported to an IFF format by



As a top-flight video digitiser, ColourPic's high performance is liable to plonk you on cloud nine.

pressing the I key. And that's it. Simple as taking a picture, but with more equipment between you and the original image, that's for sure.

Soft and beslotted

Within the software there is the capacity to store up to four images in memory locations, called slots A, B, C and D. The software allows you to refer to these slots at any time and even move the pictures around from slot to slot. Fetch – the F key – gets a picture from a slot and Return – or the R key – sends the currently displayed pic to the slots. The reason for these slots is to allow you to work on a picture with the tools and then save it part way along to achieve different results.

The tools are Contrast, Brightness, Clip, Threshold, Quantise, Hist Equal, Report, Reset, Sharpness and Edge. Contrast adjusts the relative intensities of the pixels in the picture, which allows you to make the best of some dodgy lighting when grabbing from video. (You have no control over the intensity of the video lighting after all). The range can be

Continued on page 56

Good Digitising Guide

The first thing you'll need is a digitiser. This is a piece of hardware that plugs into your parallel port and gives you the ability to port pictures into your Amiga. Which one you choose is up to you, although here are a few rough guidelines to be going on with:

● The one you'll hear mention of more often than not is Digi-View. This is a little white box that sits at the back of your computer and accepts input from a black-and-white or colour video camera or video. If you use a colour camera or video you'll need a RGB splitter box. Why? Well, Digi-View was designed for use with b&w cameras, so in order to get a colour image out you have to either hold up a red, green and blue filter in front of the lens, or you have to intercept the red, green and blue bits of the picture electronically; hence the splitter.

● There is another way you can go, and this is also down at the low end of the spectrum, with the VIDI Amiga. Whereas the Digi-View is a straight digitiser by which the image grabbed has to be a still frame on a video or a still picture from a camera, the VIDI is a frame grabber. This means that the machine grabs the frame you want to digitise on the hop, while the video or camera has a moving image on it. The picture is sampled every so often, and so quickly that when you press the grab key on the keyboard, the last 15 frames can be viewed or saved. The device stores all the monochrome images so you can either save them all or just pick the best of the bunch. You can use an optional extra RGB splitter box to get colour images, and in this way get full colour images similar to those grabbed with Digi-View.

● At the top end there's the likes of ColourPic or SuperPic (see full review) frame stores, which are more like the kind of things you get in TV studios. They allow you to freeze perfect frames from a normal video source. Once the frame has been stored in the memory of the ColourPic, you can take your time to grab the RGB components from the stored pic.

● Right at the bottom of the scale there are hand digitisers like Datel's Handy Scanner. They are like miniature fax machines. Roll one across the image and it scans the picture into the computer as a black-and-white image. The image can be grey scaled using a dithering pattern, but this isn't to be recommended.

On a scale of picture quality I'd rate the ColourPic first, Digi-View second, then the VIDI, with the hand scanners coming last. Cheap frame grabbers always give you a slightly degraded image, but for the price you have to admire the quality you do get from the VIDI. And the hand scanners quality will depend on the quality of the image you scan from, plus your dexterity in handling the device.

As to which one you need, first work out what it is you are going to be digitising and from what. There are three categories:

❶ From Video

If you need to get colour images from video tape, then the ColourPic is the ideal thing. If you just need fairly rough working images from video then the VIDI is just the ticket. VIDI also comes out tops if you are working to a very strict budget (aren't we all?). Digi-View works okay with a video splitter, but really use with a camera is its true forte.

❷ Using A Camera

Digi-View is good quality and works in all resolutions from two-colour low-res up to 4096-colour dynamic HAM. If your images are flat, like photographs or artwork, you'll like as not need to look at the Digi-View device and a cheap mono camera. You can take pictures of real life using Digi-View, but the scene has to be completely static to scan in properly. You'd be far better off taking a picture first and then pointing Digi at it.

❸ Scanning

As well as the hand scanners that do poor grade black-and-white, there are some very good flat-bed and tabletop scanners, particularly those made by Sharp, such as the JX-100. They scan flat images in colour and are capable of providing extremely good quality images – scanning in 24-bit images for DTP purposes, for example. So if your needs are for high quality and DTP, then you will be needing to spend a bit on a proper scanner.

DigiTips

Finally some tips about how to get the best out of digitisers. You will always lose quality when grabbing pictures on the fly with all but the most expensive units, and VIDI is only mono. But you can improve your pictures no end with any digitiser, even a home made one, if you follow these handy tips:

● Always use plenty of EVEN light. Light is important as this increases the contrast in the finished picture. It's a common mistake to try and take a picture in semi-darkness. Video cameras are not very sensitive to light, so drown the thing with illumination.

● Always use steady camera mount. A copy stand is useful, one on which you can mount the camera pointing down at a baseboard and angle two lights for the best coverage.

● When using cheaper digitisers, use a mono camera and filters as this gives a better result. It cuts down on the kind of herringbone patterns my video columnist friend Gary Whiteley is always complaining about.

● If you intend using a high quality full-colour frame grabber and want to do overscan interlace pictures in HAM, make sure you have a fatter Agnus chip, as 512K of chip memory just won't be enough.

Continued from page 55

adjusted all the way; in other words, if you press the down contrast button a lot you'll eventually end up with a black frame. What Contrast is actually doing is halving or doubling the intensity of the contrast between the darker and lighter pixels.

Brightness works in a similar way, except that it lightens or darkens all the pixels in the picture at once. Like Contrast, it should only be used sparingly or your pictures will start to look a little bit odd. Okay if that's what you want, but if you want a more lifelike effect then it's much better to go steady.

Clipped tones

Clip is a more subtle treatment, and this allows you to reduce the intensity of a range of tones in the picture. For example the glare in a highlight can be reduced by clipping it slightly, making the whole effect more subtle while not affecting the lower tones in the grey scale.

Threshold is a similar effect to Clip, but this one changes colours above a certain mark to white, and those below to black, giving a very good high-contrast image instantly. This is very good for black and white DTP programs that cannot handle greys too efficiently.

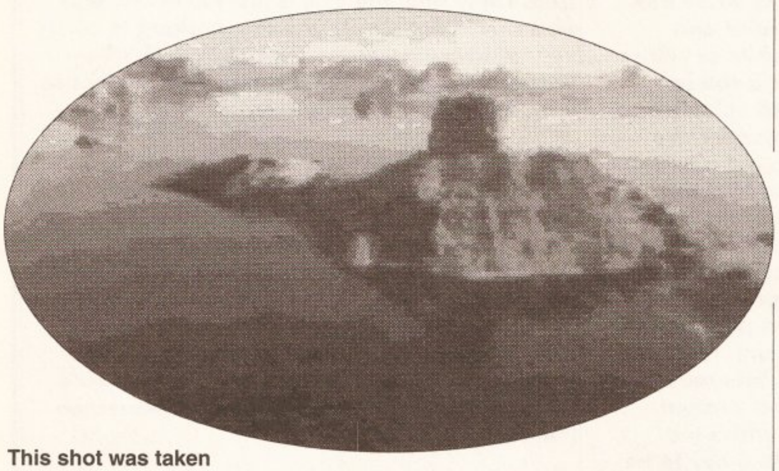
Quantise trims the amount of bitplanes used in the picture – for bitplanes read colours. If you want to reduce the number of colours in a picture, Quantise it. The resulting picture is recalculated to include as much detail from the original pic.

Hist Equal is a Histogram Equalisation tool. The 'histogram' is a sort of bar graph representing the distribution of colours or shades in a picture. Hist Equal tries to even out the distribution of shades to make the picture a little more even.

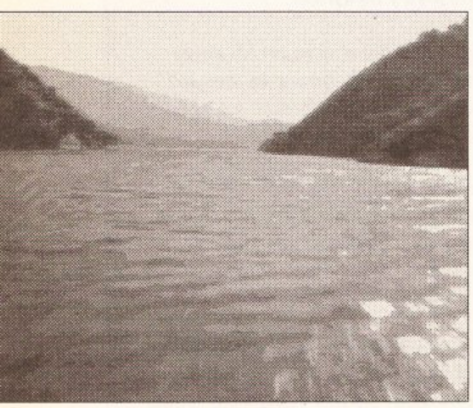
Report displays the histogram I just mentioned and counts pixels at each of the 64 shades that ColourPic can handle. This may or may not be important, but it's a jolly nice little bell and whistle.

> *"ColourPic has more features than a man with three heads"*

Sharpness scans the picture and sharpens up the boundaries between the shades, making them better defined and having the effect of sharpening the entire picture up. If you do this more than once the image can look a bit cheap and synthetic. A lot of the subtlety in digitised pictures is created by their very fuzziness, as the eye makes up for any detail it doesn't see. So this effect should be used sparingly, unless you really want to make your pics look weird.



This shot was taken from an altitude of about three feet – the height of Snouty's test bench. Desktop video beats the chore of gathering one's own video footage.



Down by the river, digitising gets lively with some fast-moving action for grabbing on the fly.

Close to the edge

And finally there's Edge, which does a very sophisticated trace of your picture and produces an image which is a good starting point for line drawings of the image. The boundaries of each shade are followed to see where they go, then the colours either side of the line are removed, leaving a very strange line-strewn contour map-style image. You can clean it up in a paint package and use it to produce line drawings using the basic shapes that the digitised image provided you with.

As a safety measure, you can get the picture back the way it was before you started messing with it by pressing F for Fetch to get the picture back from it's slot.

Another effect at your disposal is MultiCapture. This automatically drives the freeze button and Import button to grab a sequence of images. The reasons this would be employed are for Noise Reduction or for special effects. The effects are just those you can get by re-capturing the same image over and over, but while moving something in the frame. An odd effect, but some people like it. The noise reduction angle is for use with certain cameras that produce extra picture 'noise' in low light. MultiCapture solves this problem by capturing the same pic over and over to average between them, thereby evening out the problems.

Ooh yummy

ColourPic is the most enjoyable digitiser I've ever used, and its quality is astonishing.

My one criticism is that it's hard to get animations from video without using the still frame a lot, and even on my expensive machine *[Poser – Ed]* the quality is worse from still frame than it is from moving video. Why this is I can't really tell without getting Gary to run an oscilloscope over the signal. (Even then I suspect, knowing us, we'd get all excited about the patterns on the scope and forget what it was we were actually looking for). But this minor winge aside, I have to say that the pics we got out, even with my scratty old video tapes, were the best quality I've had out of a digitiser. With a still camera, the quality is even better and nothing shows this off more than the demo pictures that are supplied with the program disk.

There is another version of ColourPic called SuperPic, which incorporates a genlock – an extra device for overlaying Amiga graphics on video pictures. Obviously this is more expensive and only any use if you intend doing a lot of desktop video.

In short, ColourPic is a cracking piece of kit and will find a good home with anyone who needs to grab images from video sources. AS

Shopping List

ColourPic £399.00
SuperPic £499.00
Prices include VAT & courier delivery.
JCL Business Systems
Knowle Farm Clock House,
Wadhurst Road,
Frant, E Sussex
TN3 9EJ
☎ 0892 75791

Checkout

ColourPic

Construction 9/10
The unit is housed in a very sturdy metal box and nothing short of a direct hit with an anti-tank weapon will even dent it. I haven't tried this as my anti-tank weapon is at the menders.

Flexibility 8/10
Colourpic is very flexible, though I wouldn't like to try and fold it into a 9"x4" envelope. The unit offers many ways of grabbing the very best quality images from a variety of dodgy sources and features some very powerful tools to make the best of what you have to work with.

Features.................10/15
ColourPic has more features than a man with three heads. The range of tools makes it a very powerful machine and the inclusion of hard-wired knobs on the front of the casing means you don't have to be a contortionist to make it work, unlike some units I could mention.

Ease of use.............15/15
Using the thing couldn't be easier. As a wise man once said: "If I could use it and be up and running within five minutes, then so could you."

Speed 9/15
The speed is good, but in the field of high-quality digitising, it is never desirable to rush things too much. A faster processor in your Amiga would be a boon.

Documentation.........8/10
Not a lush and well-produced manual, but concise and informative nonetheless. I managed to figure out how the thing worked without it, so it's not really necessary, but a good fall-back for some of the more advanced features.

Price 21/25
A bit rich for most people's blood, but putting it into perspective, it is a digitiser and splitter in one neat box. You would have to pay about £200 extra for the nearest equivalent of the same quality.

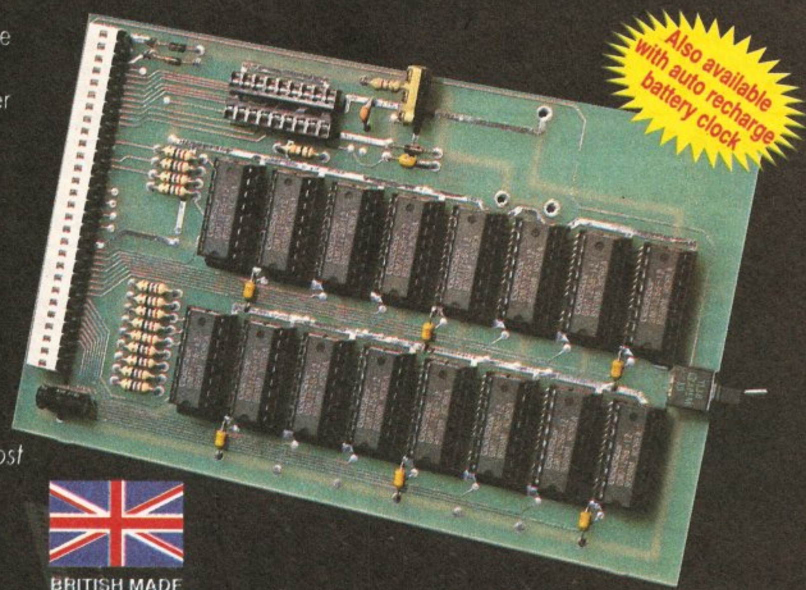
AMIGA SHOPPER 80/100

While too expensive for casual use, the unit is a very high quality and reliable solution. If you need quality and a professional spec, then you can't really go far wrong with this box. It may not be up to broadcast standards, but ColourPic is easily the highest quality enthusiasts or desktop video-style digitiser. If you run a small TV studio, are a multimedia author or just a hardened tinkerer with £400 burning a hole in your pocket, this could well be the unit for you.

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QUESTIONNAIRE

Take your chance to influence how Amiga Shopper *develops in the future. Act now, tell us what you want and we'll try to give it to you*

Yes, we know we ran a questionnaire in issue one, but with a new launch there are lots of new readers for the first few issues and many people had trouble getting issue one because it sold out so fast. Maybe your opinion of us has already changed? So, here's your chance to tell us exactly what it is you do want. We need your input and ideas and we're always ready to listen to them, so don't delay. Fill in this page and send it, or a photocopy, to: ***Amiga Shopper* Questionnaire, 30 Monmouth Street, Bath BA1 2BW**. Your replies will be treated with complete confidentiality.

Name ....
Address ....
....
....
Phone number ....

1. How old are you?
Under 16 ❑
16-20 ❑
21-30 ❑
31-40 ❑
41-50 ❑
51-60 ❑
Over 60 ❑

2. What sex are you?
Male ❑ Female ❑

3. How much do you earn a year?
Under £3,000 ❑
£3,001–£6,000 ❑
£6,001–£10,000 ❑
£10,001–£15,000 ❑
£15,001–£20,000 ❑
Over £20,000 ❑

4. Which computer(s) do you own?
A500 ❑
A1000 ❑
A1500 ❑
A2000 ❑
A3000 ❑
Other (please specify) ....

5. How long have you had your Amiga?
Less than 3 months ❑
3-6 months ❑
6-12 months ❑
1-2 years ❑
More than 2 years ❑

6. How useful have you found the advertisements in *Amiga Shopper*?
Not at all ❑
Occasionally useful ❑
Very useful ❑
More important than the editorial content ❑

7. What did you think of the magazine's tone and style?
Too technical ❑
Too simple ❑
Too boring ❑
Too jokey ❑
Just right ❑

8. How many issues of *Amiga Shopper* do you expect to buy in the next 12 months?
....

9. How many people (including yourself) have read this copy of *Amiga Shopper*?
....

10. Were you bothered by the fact that there are no colour editorial pages?
Yes ❑ No ❑

11. What was the main reason for buying this issue of *Amiga Shopper*? (tick only ONE)
For the hardware reviews ❑
For the software reviews ❑
Because there are no games in it ❑
For the programming tips ❑
To look for good buys in the ads ❑
For general tips on using the Amiga ❑
To keep in touch with other Amiga users ❑
To get the latest news ❑
Because it's only 99p ❑

12. How do you rate *Amiga Shopper* in terms of value for money?
Excellent value ❑
Good value ❑
Reasonable value ❑
Poor value ❑
Rip-off ❑

13. Which computer magazines do you buy? Please give each a rating out of 10.
Amiga Shopper .... /10
.... /10
.... /10
.... /10
.... /10
.... /10

14. Give a rating out of 10 for the features in this issue.
News .... /10
Amiga Answers .... /10
Letters .... /10
Paint programs guide .... /10
DTP column .... /10
Comms column .... /10
Graphics column .... /10
AMOS column .... /10
Video column .... /10
Business column .... /10
Music column .... /10
Thinker review .... /10
Speaker/mouse reviews .... /10
AmigaDOS column .... /10
Education column .... /10
Programming language guide .... /10
Assembly programming .... /10
Reader ads .... /10
Buyers' guides .... /10
PD world .... /10

15. Have you become interested in a subject because of *AS*, if so, which one?
....
....

16. What software do you (a) own or (b) intend to buy this year?
Word processor a ❑ b ❑
Database a ❑ b ❑
Spreadsheet a ❑ b ❑
Graphics a ❑ b ❑
Video titling a ❑ b ❑
Desktop publishing a ❑ b ❑
Communications a ❑ b ❑
Assembler a ❑ b ❑
Accounts a ❑ b ❑
CAD a ❑ b ❑
Programming language a ❑ b ❑
Music a ❑ b ❑
Sound sampling a ❑ b ❑
Video digitising a ❑ b ❑
Educational a ❑ b ❑

17. What hardware do you (a) own or (b) intend to buy this year?
Second disk drive a ❑ b ❑
Hard disk a ❑ b ❑
Joystick a ❑ b ❑
MIDI interface a ❑ b ❑
Modem a ❑ b ❑
Memory upgrade a ❑ b ❑
Printer a ❑ b ❑
Monitor a ❑ b ❑
Freezer cartridge a ❑ b ❑
Sound sampler a ❑ b ❑
Genlock a ❑ b ❑
Video digitiser a ❑ b ❑
Macintosh or PC Emulator a ❑ b ❑
Accelerator card a ❑ b ❑
Hand scanner a ❑ b ❑

18. How much do you intend to spend on the hardware and software you want to buy over the next year?
Under £250 ❑
£251–£500 ❑
£501–£1,000 ❑
£1,001–£2,000 ❑
£2,001–£5,000 ❑
Over £5,000 ❑

19. Give a rating out of 10 for the following aspects of *Amiga Shopper*.
The reliability of the reviews .... /10
The usefulness of its tips and advice .... /10
Its value as a good read .... /10
Its up-to-dateness of information .... /10
Its layout and design .... /10

20. Please use this space to comment on how *Amiga Shopper* can be improved or attach a separate sheet with them on.

Thankyou for your time and trouble. AS

AMOS Action



"There are all kinds of programs available written in the terrifically powerful AMOS programming language. Each month I'll be taking a selection apart to see how they tick, so you can learn how to become as famous with AMOS as the experts."

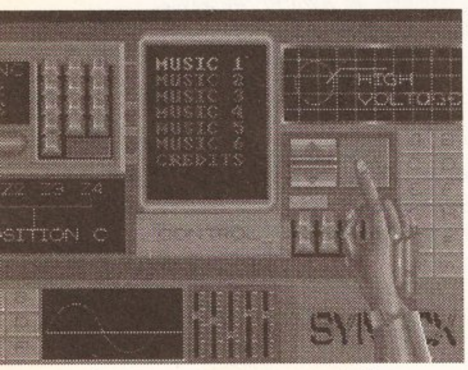
Phil South

This month Phil South exposes the innards of various utilities, demos and games written in AMOS Basic

Welcome again to the AMOS column, the place where every month you can find tutorials and lots of hints and tips for use with Mandarin Software's AMOS Basic interpreter.

Free game zone

As the PD and AMOS editor on *AS*, I'm the only person allowed to mention the 'G' word in these pages. But that's okay, as I'm always looking at the technical side of games programming using AMOS. Two games caught my eye this month, and even though both are made using AMOS, and no other form of programming, they wouldn't look out of place on a disk you would pay through the snout for.



Syntex are pretty mean dudes on the old music front. Just listen to that beautiful music score ... what? You can't hear it? Well turn up the volume on your magazine then.

Fortunately both games are available from the AMOS PD Library, so you can hang on to your hard-earned.

The first is *Wooden Ball* (APD130) by Patrik Holmstrøm of Sweden; a sort of *Speedball* clone. The quality of this game is such that it's quite hard to think how it could have been done in AMOS. But I guess that is just another example of how mega-stonkingly good AMOS really is as a development language. The graphics are really top notch, and that is the clincher really. But apart from the GFX, the code itself is impressive and well worth a LIST.

The other game is *Balloonacy* (APD115) by certified nutter Delboy Dodson, a hilarious variation on the old *Bomber Run* Basic game, in which you fly by a row of skyscrapers and bomb the Hell out of them so you don't fly into them.

Balloonacy is very funny and, in it's own way, very addictive. I've decided to show you one of the routines just to demonstrate the author's skill. It governs whether the lights in the buildings are on or off depending on if the building has been bombed or not. As you beat the buildings down with your bombs, this routine checks to see if the power for the lights is still on.

```
Procedure BUILDING_LIGHTS
    If BUILD_HIT>(BUILD_TOT/2)
and LIGHTSOUT=False
        If Rnd(3)=1
                LIGHTS
        Else
    If Rnd(15)=1
        Flash Off
        Colour 13,$FFB
        Flash 31,F$
    End If
    End If
    End If
    If
BUILD_HIT>((BUILD_TOT/4)*3) and
LIGHTSOUT=False
        LIGHTS
        Flash Off
        Colour 13,$996
        Flash 31,F$
        LIGHTSOUT=True
        End If
End Proc
```

The really surprising thing about AMOS is the number of demo crews that are emerging using the thing. I would have thought that the average demo type wouldn't touch any kind of Basic with a six yard cattle prod, but you'd be surprised at how adept some of these guys are. The best demos I've seen just recently are by a guy calling himself Benson and a crew called Syntex.

JJuddery demos

Up to now a lot of the scrolly demos I've waded through are a bit juddery, but both these demo makers seem to have cracked this nut for good. Smooth scrolls and very entertaining music is all over the shop, most of which is original, I hasten to add. Try out disks APD 99, 125, 129, and 131 for samples of what these guys are up to.

AMOS PD disk LPD9 contains AMOS Assembler, for those of you

Snouty roots for tips

Every month I will be printing hints and tips on AMOS from my own sources and from you, the readers. If you have any hints and tips (preferably accompanied by mini listings) you want to send me, whack them on paper or a disk and send them to: Phil South, AMOS Column, *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW. Or you can e-mail me on CIX (snouty@cix), Micronet/Prestel (219997854) or Telecom Gold (74:MIK2077).

Amend Alert

On page 17 of the AMOS manual it says you can test the ALERT box by typing in the following:

```
ALERT [50,
"Exterminate","Stephen","Yep!""
Nope!",13]
```

In fact the proper command is:

```
ALERT [50,
"Exterminate","Stephen","Yep!""
Nope!",1,3]
```

with an extra comma between the 1 and the 3.

Slide it in

You can make yourself a nice little slideshow program in AMOS by using the following formula:

```
Music 1 : Hide : Curs Off
Screen Open 0,640,256,2,Hires
'
MAIN:
Load Iff "df0:picture 1",0
Wait Key
Load Iff "df0:picture 2",0
Wait Key
```

(and etc... until:)

```
Load Iff "df0:picture 10",0
Wait Key
Fade 5 : Wait 75
Music Off
End
```

Load the <music>.abk file before you run it and hide the mouse pointer and cursor to keep the screen clear for your pictures. The fade must have a wait after it as the program will just proceed unless you hold it up. The formula for how much waiting you have to do is to multiply the fade speed, in this case 5, by 15. So this fade is quite a fast one and you only need wait 75 clicks before going on. If this is a demo of your graphics ability, then why not float some sprites at the same time. And how about a nice scrolly message too?

JARGON BUSTING

.ABK: This is AMOS's way of storing graphics and sound data. As it uses a different data format to the standard Amiga one (IFF), conversion programs must be used on sprites, pictures and music created with non-AMOS utilities before their inclusion in your AMOS program.

COPPER: The Amiga's graphics CO-PRocessor. It can be instructed to change the parameters of the display as it is drawn on the screen, so allowing screens of different modes to be visible at once, or rainbow effects whereby many more colours can be seen than normally permissible in a given screen mode.

INTERLACE: Interlace is a method used to double the apparent vertical resolution of the monitor by alternately refreshing the screen at a slight vertical offset, thus squeezing an extra line between each of the lines of a non-interlaced screen.

NTSC: National Television Standards Committee. This is the name for the TV colour-coding system used in the USA and other countries. It has 525 lines, running at 60 fields and 30 frames/second. It is often, and perhaps unfairly, japed at as Never Twice the Same Colour by PAL standard users.

PAL: The other main TV colour coding system (with the exception of France's SECAM system), which is in use around the world and was developed by Britain. PAL refers to Phase Alteration Line. In fact, there are several hybrid PAL systems in use, all of which are slightly different.

RAMOS: The AMOS runtime system, which enables your AMOS programs to run independently of the full AMOS package. It acts as interpreter for AMOS code.

AMOS News

I got AMOS version 1.23 through and it improves some features from 1.21. AMOS now works properly on NTSC screens. The =NTSC function returns true if AMOS is running in NTSC; false if in PAL. Interlace is covered and is used by adding +laced to the screen resolution when opening a screen, ie:

```
Screen Open
0,320,512,16,lowres+laced
```

Input and Sequential File bugs are now fixed, though I never found any problems. Other details of AMOS 1.23 and news of further updates will be covered in the AMOS Club Newsletter.

May be available

Also new are the AMOS Compiler and AMOS 3D. These are being finished as I write and should be available in May. The initial version of the compiler was modemed to Mandarin Software on March 24 and, after testing with as many PD programs as can be found, Mandarin will be releasing it.

It is a stand-alone program at the moment and not linked to part of the AMOS system like the STOS Compiler was. AMOS 3D is coming along, manual and object editor-wise, but still needs tickling.

Another newie is AMOS TOME – a map editor for games – by Aaron Fothergill. Andrew Braybrook used the STOS version of TOME to make the maps for *Rainbow Islands*, which shows what a powerful utility it is. You don't have to make maps for AMOS programs, just create them using the editor and save them to create the rest of the program in C or assembler. Simple really. So keep your eyes peeled for AMOS TOME, or call Mandarin on 051 357 1275 for details.

out there who are not just a pretty face but a pretty mean coder too. The tricky thing about AMOS Assembler is that you just embed the machine code you want to run in your program, as in the panel to the right. All the lines are read in as C$, then the assembler is activated and all thel code you typed in is assembled and run.

The demo programs are short and, to be really honest, I can't tell how it works, but you can take it from me that it's totally brilliant. The basic program to get you going is included, plus a bunch of example programmes to demonstrate the fastness of the thing.

The results are nothing less than gobsmacking, especially the fast Mandelbrot program. (Okay, so fractals are boring, but not this fast they're not.) If you like assembler, then this is the PD disk for you mate. One thing I would like to see is a C compiler written in AMOS. Now that really would open a can o' worms.

Machine code embedded with AMOS Assembler

```
C$=C$+"Chaos_Curls:"
C$=C$+"move.l a3,a5;"
C$=C$+"add.l #4*4,a3;"
C$=C$+"move.l (a3)+,d0;move.l (a3)+,a6;"
C$=C$+"move.l #4,d6;"
C$=C$+"lea plane_0,a0;"
C$=C$+"lea plane_1,a1;"
C$=C$+"lea plane_2,a2;"
C$=C$+"lea plane_3,a3;"
C$=C$+"lea plane_4,a4;"
C$=C$+"move.l #319,d1;move.l #255,d2;"
C$=C$+"loop:"
C$=C$+"movem.l d1/d2,-(sp);"
C$=C$+"btst #6,$bfe001;bne.b no_quit;movem.l (sp)+,d1/d2;rts;"
C$=C$+"no_quit:"
C$=C$+"add.l 4(a5),d1;add.l (a5),d2;"
C$=C$+"move.l d1,d3;muls d3,d3;lsr.l d0,d3;"
C$=C$+"move.l d2,d4;muls d4,d4;lsr.l d0,d4;"
C$=C$+"move.l #0,d7;"
```

***AMOS Assembler* can make your listings run as fast as my nose after a particularly hot chilli.**

Over the rainbow

Ever wondered how the experts construct those amazing rainbow copper patterns in their programs? They are very clever, but now you can very clever too.

One of the most interesting pieces of software to come out of the AMOS PD Library lately is the *Rainbow Warrior* program (APD 76) by Spadge (aka Martyn Brown). This program lets you construct and save rainbow copper patterns for use in your programs and it uses the mouse to let you draw them on screen. After drawing the rainbow of your choice, it can be saved to disk in a variety of useful formats, such as AMOS program code, *K-Seka* and *Devpac* assembly language, raw code – in fact, anything useful.

The program is written in AMOS, and to run it you could either load AMOS and load the program, or bolt RAMOS to it and run it from an icon. The program saves its AMOS code in ASCII format so to use the code it saves just Merge ASCII.

The resulting code looks a lot like that in the panel below. In fact, just tap this in to see what happens. To adjust the code so it doesn't print a duff screen over the bars, open a screen before you go into the bars routine, using:

```
Screen Open 0,320,256,2,Lowres
```

and maybe even a Wait Key before the RDATA label, and you'll see the difference. Or you could change the Colour Back 0 command for Cls 0 for the same effect.

Accursed cursor

One criticism is that the cursor in the program prints lines on the screen about a centimetre above itself rather than actually on the cursor. This is a bit of a fag, but presumably it will be fixed in later versions.

This is only version 1.01 and Martyn says in the docs that it is a wee bit buggy, so keep up with the new updates.

It seems to work OK though and many of the disks I've been getting in the AMOS PD Library have used this utility to create their copper bars. That's all we have time for this issue. Write in and show me what you've been doing with AMOS. Better still, send in a disk and I'll tell the world how skillo you are. Many thanks must go to Sandra Sharkey for her help with the programs she sent me. Sandra does more to further the cause of AMOS than just about anyone I know, and she's doing a brilliant job up there in Wigan. Big hand for Sandra ... (yayyyy!) Triffic. See you next time. AS

Shopping List

All APD discs £2.50
All LPD (licenseware) £3.50
from AMOS PD Library
25 Park Road, Wigan WN6 7AA
☎ 0942 495261

Amos – The Creator £49.99
by Mandarin Software
Database Direct, FREEPOST,
Ellesmere Port,
South Wirral L6 3EB
☎ 051 357 1275

Rainbow Warrior's merged ASCII

```
Rem
Rem  * Created with RAINBOW WARRIOR - Amos Copper
Generator *
Rem  *  Yup, you can blame good ol' Spadge for this
one...  *
Rem
Set Rainbow 0,0,280,"","",""
Rainbow 0,0, 0, 280
Colour Back 0
Restore RDATA
For C=0 To  279 : Read CVA : Rain(0,C)=CVA
Next C : View
RDATA:
Data $0,$0,$0,$0,$0,$0,$0,$0
Data $0,$0,$0,$0,$0,$0,$0,$0
Data $0,$0,$0,$0,$0,$0,$0,$0
Data $0,$0,$0,$0,$0,$0,$0,$0
Data $0,$0,$0,$0,$0,$0,$0,$0
Data $0,$0,$0,$0,$0,$0,$0,$0
Data $0,$0,$0,$0,$0,$0,$200,$300
Data $400,$500,$600,$700,$800,$900,$A00,$D00
Data $C00,$B00,$A00,$900,$800,$700,$600,$500
Data $400,$0,$0,$0,$0,$0,$0,$0
Data $0,$110,$220,$330,$440,$550,$660,$770
Data $880,$990,$AA0,$BB0,$CC0,$DD0,$EE0,$FF0
Data $FF0,$EE0,$DD0,$CC0,$BB0,$AA0,$990,$880
Data $770,$660,$550,$440,$330,$220,$0,$0
Data $0,$0,$0,$0,$0,$0,$0,$0
Data $0,$0,$0,$0,$0,$0,$0,$0
Data $0,$0,$0,$0,$0,$0,$0,$0
Data $0,$0,$3,$4,$5,$6,$7,$8
Data $9,$A,$B,$C,$D,$E,$F,$F
Data $E,$D,$C,$B,$A,$9,$8,$7
Data $6,$5,$4,$3,$0,$0,$0,$0
Data $0,$0,$0,$0,$0,$0,$0,$0
Data $0,$0,$0,$0,$0,$0,$0,$0
Data $0,$0,$0,$0,$0,$0,$0,$0
Data $0,$0,$0,$0,$0,$0,$0,$0
Data $0,$0,$0,$0,$0,$0,$0,$0
Data $0,$0,$0,$0,$0,$0,$0,$0
Data $0,$0,$0,$0,$0,$0,$0,$0
Data $0,$0,$0,$0,$0,$0,$0,$0
Data $0,$0,$0,$0,$0,$0,$0,$0
Data $0,$0,$0,$0,$0,$0,$0,$0
Data $0,$0,$0,$0,$0,$0,$0,$0
Data $0,$0,$0,$0,$0,$0,$0,$0
Data $0,$0,$0,$0,$0,$0,$0,$0
Data $0,$0,$0,$0,$0,$0,$0,$0
Data $0,$0,$0,$0,$0,$0,$0,$0
Rem
Rem  * Alter the values in the RAINBOW and SET RAINBOW*
Rem  * to position and control the rainbows. See the *
Rem  * manual to check on Y positioning, Length and *
Rem  * which colour it is to effect.. Have fun! *
```

Image conscious

> "As a professional video producer, I know what features software needs to be *really* useful. My aim is to cut through marketing hype and reveal the full facts to help you choose what is best for you."
> Gary Whiteley

Expo systems expert Gary Whiteley rates the performance of two video presentation programs that aim to help you smarten up your image

When you've spent a lot of time using your Amiga for video production, you'll know how important it is that your presentations or titles look good. Because if they don't, they won't get their message across – and if that happens, they've failed to do their job.

This month I'm taking a look at two software packages that that set out to help you get your presentations right. They're both full of useful features, but where *Broadcast Titler* 2, by Innovision Technology, pronounces itself a 'Broadcast Quality Character Generator', Digital Vision's *Scala* wishes to be known as a 'Professional Presentation Package'. In many respects each package crosses over into the territory of the other, though it is their individual specialisation that separates them.

***Broadcast Titler* 2 claims to 'combine the high-end functionality of dedicated video production equipment with the flexibility and cost-effectiveness of Amiga Desktop Video Systems'. It features anti-aliased fonts, a host of special effects and text editing and layout functions that set out to help you work both quickly and creatively.**

***Scala* is a similar kettle of fish, with many of the functions of *Broadcast Titler* 2, plus some new ones of its own, such as Layouts, Symbols, printer output (including Postscript), interactive playback and the ability to incorporate animations into a presentation. According to the manual, *Scala* was developed 'to create an easier to use, more powerful and more complete presentation and desktop video system for the Amiga computer. We want normal people to be able to present their thoughts and ideas in a quick and elegant manner'.**

Other common features include both mouse and keyboard operation, the loading of pre-prepared ASCII and IFF files, multiple colours and text effects such as outlines and shadows. Hard-disk users can install the programs for faster access. Each program has its own strengths and weaknesses. So, in strictly alphabetical order only, let's get to work.

Broadcast Titler 2

Broadcast Titler 2 comes on a single disk which carries the main program and a utility to convert standard Amiga bitmapped fonts into the compressed format required.

Loading is simple – boot with the disk, select the F1 key and, after a message telling you how many pages you have available (according to the amount of fast RAM available in your machine – I get 400 with 3.5Mb, 200 with 2Mb), the main program is quickly up and running. Hard disk users double-click on the BT icon.

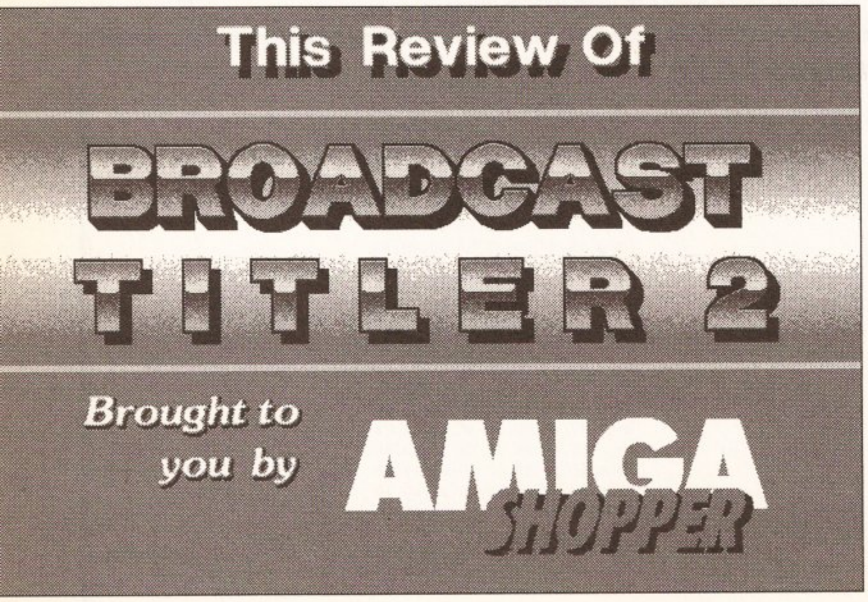
One at a time

In order to use the Amiga's capabilities to the full, *Broadcast Titler* 2 takes over the machine, precluding multitasking. But this won't bother folks who are reasonably organised and who have prepared their backgrounds and other items in advance anyway. Incidentally, you don't need to reboot the machine to exit. Simply hit CTRL and ESC together to return to the Workbench screen if that's where you ran the program from.

Broadcast Titler 2 will work on any Amiga including the A3000, and with Workbench 2.0, but a minimum of 1.5Mb RAM is needed in order to load pictures. Any further RAM will be utilised to allow more pages, fonts or pictures to be loaded, as these are all kept in RAM for faster access. If running on an A3000, it can also support Super High Res Mode (for extra quality).

Once the program has loaded, the main text editing screen appears, which has a small menu across the lower part of the screen. Most of the controls can be accessed through this and subsequent menus, allowing for the loading of fonts, scripts, pictures and ASCII files, font selection, colour palettes, effects, layout parameters and so on.

Taking each of these controls in turn, from left to right we have: FONT, LINE, PAGE, PLAY and FILE, followed by five buttons that allow you to move back and forth between your created pages. The buttons are activated by clicking on them.



Images like this tasteful and apt screen are quite simple to put together and are just the ticket for introducing an impressive presentation.

Taking control

FONT opens a menu from which you make selections of typeface, shadowing type (solid or cast) and direction, outline size, face colour, anti-aliasing and pattern fill – a great feature by which the face of a font is remapped by an IFF brush. This lets you use all kinds of pretty effects, like polka-dots, air brushing or indeed whatever you like. Changes to the parameters are shown on a letter 'A' which represents your chosen font on the screen. As with all the *Broadcast Titler* 2 menus, clicking the right mouse button or pressing [ESC] will exit you back to the main menu screen. Now, when you type onto the main screen you will be typing with your selected font and style.

LINE: Within this menu are four sub-menus called EFFECT, PALETTE, PICTURE and PATTERN. The EFFECT menu allows you to control what happens to each or any line of text when it is played back as part of a sequence. So you could make the first line slide in from the left, then the next line fade up from the background colour and so on. There are 16 of these line transitions to

> *"You can also use Broadcast Titler 2's demo disk to make your very own auto-booting presentations."*

choose from. They work in conjunction with page transitions, so you may have a page that slides up from the bottom of the screen and then the lines appear on it according to their own transitions. The PALETTE menu is where you make colour changes to either lines or pages and these happen live on the screen. You can have 16 colours per line and up

to 320 colours per page. The PICTURE sub-menu is where the placement on-screen of previously imported pictures (16 colour, hi-resolution overscan) is carried out. By adjusting the position of the top left corner of your picture, you can determine where it appears on-screen. This is useful for positioning an image smaller than the screen size. Finally, the PATTERN sub-menu gives you the option of placing various different preset patterns behind text, such as shaded fills, boxes and so on.

> **"There are infinite combinations of line and page transitions that can be made."**

Menu master

PAGE is the largest of the menus, listing all your current pages. From this menu you access sub-menus for EFFECT, LAYOUT, PALETTE and PRESTO PAGE. You can also copy, paste, insert, delete and append pages here. The EFFECT sub-menu is probably the most important menu, for it is where you gain access to more than 70 page transitions (some, such as weave, sail and flip are really neat, but much too difficult to describe) which you then assign to your chosen pages, along with parameters for the speed of the transition and the amount of time to wait before the next transition takes place. Selection is very easy; just click on a button, set your times and exit. If you wish to repeat the same effect over a series of pages, this is easily accomplished too. LAYOUT sets the text justification, defines the horizontal position for crawling text, sets tabs and various screen and crop margins. PALETTE has already been described, so that leaves PRESTO PAGE, which simply marks the selected page as a Presto Page.

Playtime

PLAY provides options for playing back sequences in various ways. These include playing from the current page or from the first page, looping, playing pages at random or waiting for a key to be pressed before the next page shows. There is also a GPI (General Purpose Interface) button which can be be set to cause a sequence to be triggered either from an external device or by the mouse. This means that a sequence will start immediately it is triggered – ideal for video editing applications. Function keys can also be used direct from the main screen to initiate the various forms of playback. The PLAY menu also contains the DRAW PRESTO PAGE option, in which Presto Pages are



The process of rendering your corporate message illegible is made supremely simple with *Broadcast Titler*'s pattern-filled text facility.

generated before display, and a button for access to a SCREEN OPTIONS menu whereby the screen display position can be set and a status bar turned on or off so that a user can be prompted while calling up pages randomly. This status bar will not be output via a Genlock, giving *Broadcast Titler* 2 the possibility of live TV-style output via visual cueing.

File under F

Finally, there's the **FILE** button, which is used to load, save and clear sequences, load other fonts and pictures for use in *Broadcast Titler* 2 and load ASCII files to be read directly as text. Loading and saving is done through directory lists, which can be a little slow at times. From this menu you can also save any particular page as an IFF picture file.

Broadcast Titler 2 is actually pretty simple to use. I made up several pages and ran as many of the various line and text transitions on them as I could. The rolls are smooth and can be set to varying speeds – or, if you only have a fixed amount of time for a roll sequence, the whole lot can be made to fit that time. Crawling is also smooth and placing the crawl line on the page is straightforward. There are almost infinite combinations of line and page transitions that can be made. For example, you could have your background slide in from the right and then all the text teletype onto the page, line by line, from the left. Or you could display page after page using different transitions for each.

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JARGON BUSTING

ASCII: American Standard Code for Information Interchange. It is the data storage method commonly used when we type text files and enables data to be exchanged between different computers.

ANIM: A method of storing animation frames, developed by Spartafilm, whereby only the changes between successive frames are stored, thus saving significant amounts of space.

HAM: Hold and Modify is an Amiga graphic mode allowing all 4096 colours to be displayed at once, with certain restrictions.

IFF: Interchange File Format is a means by which data from different graphics or sound sampling programs is saved in a compatible way.

CHARACTER GENERATOR: A video device used to generate text and transitions for transfer to tape.

INTERACTIVE: A method whereby the user can make on-screen choices as to what happens next during the playback of audio or visual information.

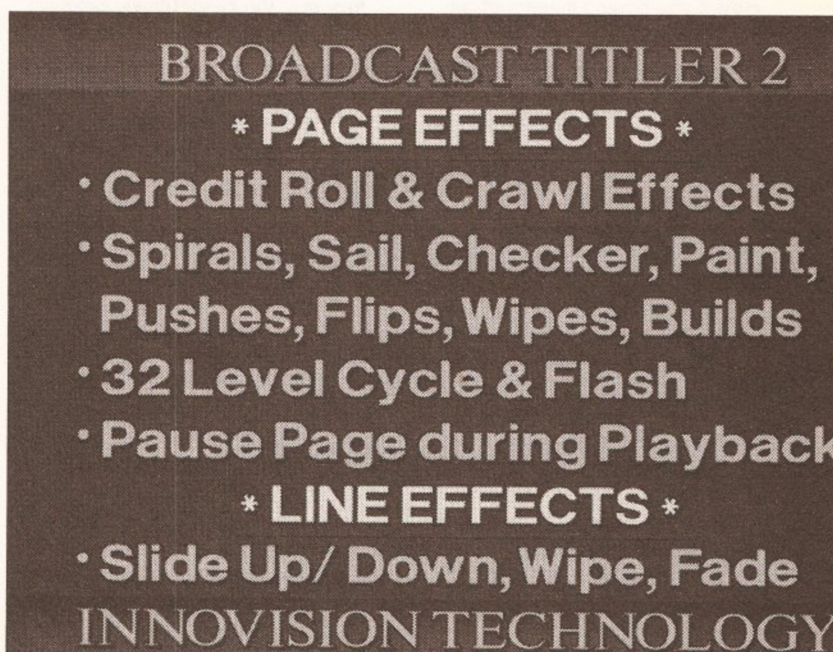
FAST RAM: Any extra memory which is not chip RAM. The custom chips cannot access it, and because such accesses to chip RAM can block out the central processor and slow down its accesses, fast RAM is faster.

GPI: General Purpose Interface – a device used to convert the output of one system to an input acceptable to another. For instance, using a suitable GPI, you could cause a video edit controller to trigger the Amiga to play back a picture sequence.

TELETYPE: A method of making text appear on a line by adding it a character at a time from the left until the line is complete.

TRANSITIONS: Are used to change from one image to another by employing such effects as wipes, fades, cuts, teletypes and so on. In video, transitions are normally carried out using a vision mixer or Special Effects Generator (SEG).

WRAP AROUND: This is what happens if you are typing text and you reach the end of a line during a word. The whole of this last word will be moved to the start of the next line. If there is no wrap around, text entry continues to the end of the line and continues on the next, regardless of any split words it creates.



Everything from double vision to sea sickness can be induced in potential clients with *Titler*'s plethora of picture shifting functions.



Four fonts come as standard with *Broadcast Titler*. If you want more, extra gadgetry is supplied to help you phrase things more dynamically.

Continued from page 63

Text entry is reasonably easy, although you have to access the font menu from time to time if you require different fonts or attributes. The program does not incorporate wrap-around for text, so if a word is too long for a line it will be broken up from one line to the next. This is particularly annoying when importing ASCII files, as they end up as a right mess if you haven't thought about their format first. You can mix fonts on lines, in different colours and sizes and with different shadows and outlines. One font can simply be replaced by another if you wish. Text can be justified left, centre or right, but cannot be italicised or set bold. If you need sloping or bold text then the font you use will already have to be like that. Text is kerned automatically, but you are able to space the letters of your text out more, or tuck them closer together.

> **"You can mix fonts on lines, in different colours and sizes with different shadows."**

First fonts

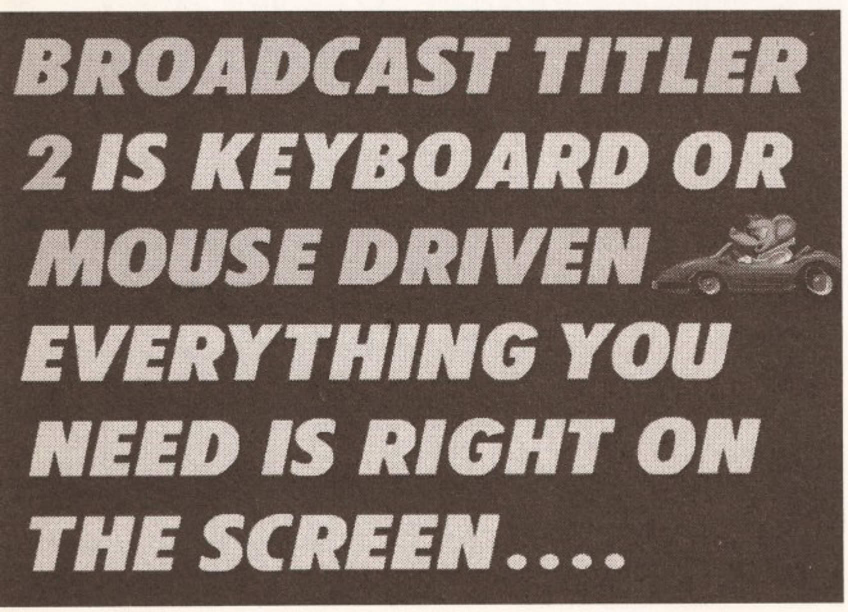
Four fonts (in various sizes) come with *Broadcast Titler* 2. If you require other fonts, you will have to convert them to the compressed .btf format used by the program. This is easily, if somewhat slowly, done using either the Font Converter program supplied or the optional Font Enhancement software.

The converter program will convert any Amiga or Color Fonts as they are. The Enhancement program will additionally allow you to accurately resize any font to your requirements and also provide it with anti-aliasing. Once converted, the font takes up much less space than it originally did, but it will only work with *Broadcast Titler* 2.

If you want to see the program in action at a dealer near you, ask them to play the included demo disk – it really is eyecatching. If you can do this sort of thing with *Broadcast Titler* 2 then you're on to a winner.

If you go as far as buying it, you can also use the demo to make your own auto-booting presentations, so it's not simply a disk which you look at, say "Aaah!" and erase.

In all then, a pretty effective package that is capable of giving impressive results. Though it can be a little tricky to work with as far as getting your deathless prose into the program, the quality of the final image should certainly help put a little vim into your character.



The great thing about developing presentation software is that you have an in-built opportunity for advertising yourself. Innovision knows this.

CHECKOUT

Broadcast Titler 2

Documentation.........9/10
Comprehensive A4 manual with helpful tutorials and easy-to-understand English.

Ease of use..............7/10
Text entry is not always as simple as I'd like, but most of the menus work efficiently and quickly. The keyboard shortcuts are a great bonus, likewise the use of cursor keys to scroll through selection button lists and direct number entry to modify numerical parameters. Easier italic, bold, underline and text movement would be helpful though.

Speed 12/15
Playback is generally fast and smooth, and the Presto Page function helps if there are problems. Time intervals can be set down to fractions of seconds if necessary.

Features.................15/20
As a Character Generator it has a lot of useful extra features and good roll, crawl and teletype transitions into the bargain.

Quality 16/20
High quality, especially with anti-aliased fonts and the use of Color Fonts. High resolution, PAL overscan graphics are used throughout.

Price 20/25
Broadcast Titler 2 certainly represents reasonable value for money (as 'professional' software goes), especially in terms of video costs generally and the high quality of its output.

AMIGA SHOPPER 79/100

Broadcast Titler 2 works well, with smooth transitions. It can be a little awkward when you're mixing fonts and pictures together on a page – especially if you are also using Color Fonts, since the palette requirements can take some mastering. Text entry could be improved. Transitions and anti-aliased fonts are good and overall the program gives excellent results.

SCALA

Scala arrives in a biggish box, enclosing a ring-bound A5 manual which contains 8(!) disks. But don't panic just yet. There's the program disk, of course, and then a disk of typefaces, scripts, symbols, layouts and palettes, another disk of typefaces, and five disks of beautiful quality background images.

Drive it hard

If you have a hard-disk you can install the whole lot (if you want). If you don't, then *Scala* will run from disk perfectly well. But you do need 1Mb of chip RAM (another one in the eye for A1000 users) to fully use all the program's capabilities. You'll also need at least 1Mb of fast RAM, but the more you've got, the merrier as *Scala* can play back animation files (in the ANIM format) and can work in many current display modes (including HAM).

Since *Scala* is more specifically a presentation package, it has features that aren't found in *Broadcast Titler* 2, such as Interactive Buttons, ANIM loading and its own language, VISUAL, for writing presentation scripts directly if you wish. It is also intuitive to use, provided you have some intuition yourself. I did get confused occasionally early on, since there are menu ideas here that I haven't seen before – and that's one Hell of a surprise after five years as an Amiga user.

BLITS & BOBS

A scala is a ladder-like structure, as found in the canals of the cochlea, which makes it an odd name for a presentation package, and an even odder name for a Madrid opera house.

Although there are enough backgrounds to keep you happy for a good while, you'll want to use a paint program to make new backgrounds and brushes (known in *Scala* as Symbols) to add to your work. And if you require more fonts, these can be loaded from disk. Unlike *Broadcast Titler* 2, *Scala* uses ordinary Amiga fonts.

Well, enough of this preamble – let's dive right into the package and have a look around.

Scala in proportion

On loading, a grey screen appears with a lot of blank spaces on it. This is the Main Menu. At the bottom are eight buttons: four used for page functions (New, See, Change and



Scala helps you produce neat backgrounds over which all kinds of images can be laid, including, for the adventurous, your own animations.

Delete), two for loading and saving scripts (Load Script, Save Script), one to run sequences (Run!) and the last to enter the System Menu (System). More on these later.

In the top left there's a slanting exclamation mark (the *Scala* symbol). Click on this to exit the program or clear the current script (but be careful – if you have no pages made you will be dumped straight out without warning). The rest of the blank space is a grid waiting to be filled up with pages. To start filling it, click New and we're into another Menu – a Requester Menu this time, with a row of buttons on the right-hand side and lists of available drives on the left.

> **"Using ScalaPrint, Scala is able to give you hard copy of your script as graphics or text."**

From here you can select a background for your page, or simply click on OK to set up a blank page. If you load a picture, it will be displayed in its original format (if *Scala* can accept it). If that format is HAM, a warning is given that text is not recommended on HAM images (because it actually doesn't look very good due to inherent problems with HAM overlays). You could also elect to load an animation. You will then be asked to set the playback speed (up to 50 frames a second) and the number of times the sequence should repeat (1 to infinity).

Once you've selected your picture, text can be added to it (although if you load an ANIM you can only add text to either its first or last frame). The Text Menu will then be loaded automatically, and you can see the background image with a set of buttons taking up the lower third of the screen.

Text and symbols

Text is entered simply by placing the text cursor anywhere on the screen and typing. At any time you can change the typeface, any of its attributes, such as colours, outline, shadows and 3D effect, bold, italic or underlined. Symbols (multi-coloured brushes) are equally easy to use and they can have many of *Scala*'s text attributes added to them. They can even be re-coloured if they are single colour. Text and symbols can be easily moved, once they are on screen, simply by selecting move, clicking on the item you wish to move and dragging it to a new position.

A grid (called Net in *Scala*) can be set to help placing. Multiple items can be moved by first dragging out a box around them and then moving as above. Changing colours of text or attributes is as easy as selecting your required colour from the palette bar, then clicking in the coloured square on the chosen attribute button. Keyboard shortcuts are available for many functions.

From the text menu you can also access other menus, such as Layout, Load and Palette. In the Layout menu are the settings for attribute parameters, such as shadow size, italic slope, underline size, character spacing and so on. These can all be changed and will affect only the text line that you have selected. Changes take place in real time, on screen, so you can see what you are affecting and how. Any layouts generated can be saved for future recall, so if you want to make a page with a certain layout it's easy to do. An IFF picture file of the current page can also be saved from here.

The Load menu enables you to select items such as text files, other backgrounds, symbols and layouts for the current page. As it suggests, the Palette menu is where adjustments can be made to the current colour palette. You can load and save other palettes, set colour spreads and toggle colour cycling here too.
There are two other important buttons on the Text menu – Buttons and List. The former is for setting up the interactive features of *Scala*. For instance, if you had a page that you wanted to use as an index for an illustrated catalogue, you could drag out a box around a word (let's say Computers) and use it to tell *Scala* that when the user clicks on the Computer word, the display will jump to a specified section of the catalogue and display further information related to computers.

BLITS & BOBS

Minerva, the popular serif typeface, shares its monicker with the Roman Goddess of wisdom, identified with the Greek Athena. But a more Mills and Boon origin can be found back in 1800, when London-based Minerva Press made a mint publishing sentimental novels.

Adding Buttons is best done when you've made the pages you wish to jump between, as this will make testing much easier. Up to ten interactive buttons can be placed on any page you like.

The List menu shows a list of all the items on the current page so line transitions can be set for them. For instance, you may want a line of text to slide in from the left. This is where you do that. Click on the Wipe button to the right of the List label, and you'll be presented with a pictorial menu of 49 Line transitions. Click on one to choose it. Each item on a page can have a different effect added to it, including Symbols. The speed of the effect can also be set, along with the amount of delay that happens before the next effect takes place. These effects become part of the current page and can be viewed before saving.

When you're satisfied with the page, it is saved and its name (or the first words on the page if you didn't rename it) is displayed in the Main Menu from where we started. Now we've got a page we can set a Page Effect on it, in an identical manner to setting a Line Effect.

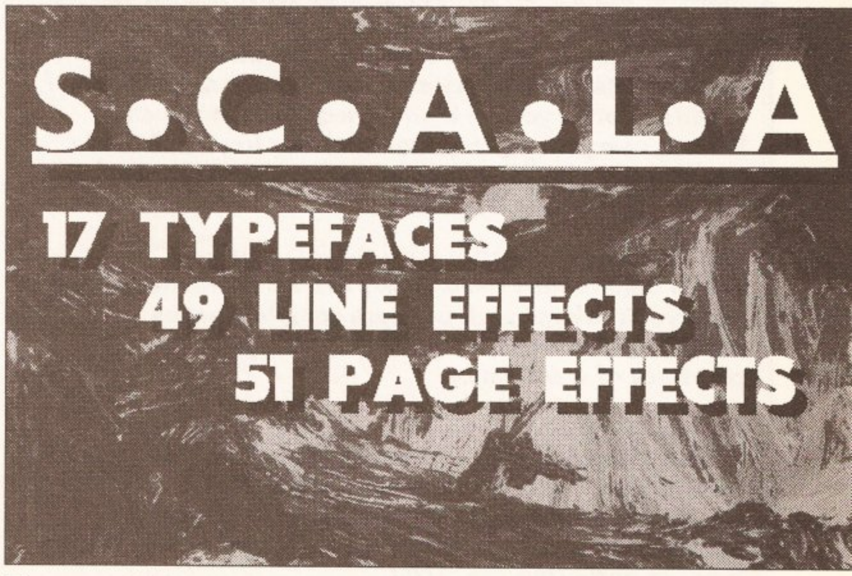
Click on the Wipe button to the right of the Page label and a pictorial menu appears – this time with Page transitions. As with Line effects, all you need to do is just point and click to choose. Speed and delay can be set for Page effects as well.

If you have a sequence of pages (or lines on a page) where you wish the same effect to apply, there is a To End button which will make all the effects to the end of the sequence (or page) the same as the current one.

Playing your masterpiece

When you've put a few pages together, they can be played back by pressing Run on the Main menu. If you haven't changed anything in the System menu, the sequence will change every time you click on a mouse button (left for backwards in the sequence, right for forwards) and a small counter will show what page you are on. [ESC] will stop playback

Continued on page 66



There are a fair few facilities to be had within Digital Vision's _Scala_, and the demo sequence is in no way afraid of blowing its own trumpet.

BUT WHAT'S IT ALL FOR?

Broadcast Titler 2 or _Scala_ can be used to dynamically display advertising, news, messages, poetry, weather maps and other types of information, in ways that are eyecatching and interesting, in both text and pictures. And of course you could always transfer your presentations on to video, on their own or, better still, combined with other video images and sound. _Scala_ can also be used interactively by incorporating Buttons into each or any page, allowing the user to make selections and then be branched off to pre-determined pages for further information.

OUTSTANDING FEATURES

Broadcast Titler 2

- **Anti-aliased fonts – no jaggy edges.**
- **Scrolling, crawling and teletype effects for text.**
- **Can use Color Fonts or any other Amiga font (after conversion).**
- **Needs only 512k of chip RAM.**
- **Full overscan in 16-colour hi-resolution.**
- **Fonts, pictures and pages in RAM for fast access.**
- **Up to 320 colours per page.**
- **Automatic patterned text fill with IFF images.**
- **Over 80 transitions for screens and text.**
- **Optional Font Enhancement software for creating anti-aliased fonts from 12 to 200 lines in size.**

Scala

- **Uses any bitmapped font (except ColorFonts).**
- **3D extrusion effects on fonts.**
- **17 quality typefaces included.**
- **Interactive functions.**
- **Printer output (including Postscript).**
- **59 high quality art backgrounds included.**
- **1MB CHIP RAM required.**
- **Works in all graphics modes, including HAM and overscan.**
- **Easy styling of text text and symbols.**
- **Loads and plays ANIM files in presentations.**
- **Over 70 transitions for screens, objects and text.**
- **Easy text and object manipulation.**

KEYS AND FUNCTIONS

Many of the option buttons in _Broadcast Titler_ 2 can be used in conjunction with keyboard shortcuts, such as using the cursor keys to scroll up and down lists, or directly entering numerical values for parameters. For example, once you've highlighted the font selection button, using the up and down cursor keys will move you through the list of available fonts showing each one on the screen as it is listed.

PRESTO PAGES

Pages defined as Presto Pages can be pre-generated to remove problems such as more complex pages rendering too slowly and causing delays in the playback of a sequence.

AND SO TO WORK...

A typical session with _Broadcast Titler_ 2 or _Scala_ would involve creating one or more pages, defining how these pages will be sequentially or otherwise displayed, saving a script for the new sequence, and finally testing, refining and using the result.

Continued from page 65

at any time. If you have interactive Buttons, you will need to activate them first by entering the System menu and selecting Buttons, (which will be marked with a tick if it is on) and either Mouse or Joystick as the trigger method. Buttons will now be active during playback.

From within the System menu the counter can be repositioned (or toggled on or off), or you can toggle the pointer, toggle loop play (and set the number of loops) or set the whole sequence to only appear line-by-line. And if you feel like changing the menu colours there are preset palettes for this. The Workbench Screen can be toggled on or off or information about the disks and memory currently installed in your computer can be addressed.

Using ScalaPrint, *Scala* is able to give you hard copy of your script as graphics or text. It supports Preferences or Postscript printers.

Stretching Scala

So far, the program seemed to be doing far too well for decency's sake, so as a final test, I thought I'd try to push *Scala* beyond it's limit.

I set up a sequence of two hi-res, 16-colour pages with backgrounds, a lo-res ANIM of 15 black-and-white digitised images, two HAM screens (one interlaced) and an interlaced, four-colour ANIM file. If this didn't give the thing a headache then nothing would.

Everything played back in order, on time, and with the transitions I had set. I must confess, I hadn't got the Amiga multitasking at the time, but even so, *Scala* put up an absolutely ripping performance. Nice one Digital Vision. AS

SHOPPING LIST

***Scala*.....................................£249**
by Digital Vision

Distributed by
Silica Distribution Ltd,
1-4 The Mews, Hatherly Road,
Sidcup, Kent, DA14 4DX
☎ 081 309 1111

Requirements: Any Amiga with at least 1MB of chip RAM and at least 1MB of fast RAM – but as much as possible. A hard disk will help, as would a second disk drive if you don't have a hard disk. *Scala* supports faster processors such as the 68020 and 68030, which will increase animation speed.

Broadcast Titler 2...................£234
(£199+VAT)
by Innovision Technology

Distributed by
Amiga Centre Scotland,
4 Hart Street Lane, Edinburgh EH1 3RN
☎ 031 557 4242

Requirements: Any Amiga, with at least 1.5MB RAM. Additional RAM and a second disk drive are recommended.

CHECKOUT

Scala

Documentation.........7/10
My main quibble here is a lack of contents index. Otherwise, the manual is OK, if at times a little vague. If you run *Scala* from disk you may be left feeling confused at times. Fortunately, ASSIGN commands from the CLI are there to get one around most problems. More details for disk users would be helpful. The tutorials are fine though.

Ease of use...............9/10
Once you've got used to it, *Scala* is supremely easy to use. Menu access is straightforward and logical and most of *Scala* can be mastered very quickly.

Speed 13/15
Playback is smooth, although *Scala* is necessarily memory hungry, especially in hi-resolution. If you want to run large sequences without glitches then you'll need lots of RAM. Interactive response is extremely good and ANIM files play without any problems.

Features.................16/20
It is a shame that *Scala* does not handle text scrolling and crawling. The print feature is OK, but it only seemed to print out background images for me, with none of the overlaid text. However, the facility to use mixed display resolutions is more than welcome.

Quality 17/20
Scala scores higher than *Broadcast Titler* 2 because of the great background art. But as with all software, you get out what you put in.

Price 20/25
Scala costs a little more than *Broadcast Titler* 2, but then you get all the extra fonts and backgrounds. I wonder what it would cost if you just wanted the basic programs, without the art work and extra fonts? If you were a DIY fan, this would be a great bargain.

AMIGA SHOPPER 82/100

Everything in *Scala* is easy to operate and great results can be obtained very quickly. Obviously, the harder you push it, the more memory you will need (I must admit I did crash *Scala* several times, but I was multi-tasking it quite heavily with only 2MB of fast RAM on board). The quality, especially in hi-resolution, is very good, its interactive features work fine and many of the typefaces are great. As a presentation package I think this one certainly has a bright future. It needs a few more features (such as scrolling and crawling, and smaller time increments) if it is to be a truly all-round presentation and video package, but no doubt if enough of you want these features, *Scala* will add them. I personally liked it a lot.

BEGINNERS START HERE

The term PC is a generic abbreviation for personal computer usually associated with the IBM PC. *The Dictionary of Computing and New Information Technology* defines the term as: "a synonym for microcomputer, generally used to suggest that the computer is suitable for use in the home." *Confessions of a Computer Journalist* defines the term as: "PC – personal computer. Your electronic buddy; thought by some to be one of the major underlying factors in the UK divorce rate."

PC on the premises

From this premise we can devise that the PC is a computer for use by one person – a desktop, laptop, palmtop – even your brain is a very powerful personal computer. Nevertheless, the original argument still holds. IBM coined the phrase PC with their original machines and it stuck. Therefore, any type of machine based on IBM's original design specifications (or one that is capable of emulating them) is a PC or PC clone.

The original PC (some are still around) was based on Intel's 8088 CPU; a fairly rudimentary eight-bit design. It came in three parts: Keyboard, base unit (with a single, 5.25" 160k floppy drive) and VDU. It was text only and had no colour whatsoever. Even in 1980, that was nothing to write home about, but IBM's reputation for producing solid machinery assured them a place in what proved to be a massive market.

Popular modular

The PC's modular design (a huge success) soon meant everyone, his uncle and probably auntie too, was producing something for the machine. Graphics were swiftly added, as were hard disks and colour displays. Later, when Intel introduced the 80286, IBM came up with a design based on that –

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Down to business

When is an Amiga not an Amiga? When it's a PC. Mark Smiddy explains – aided and abetted by the KCS Powerboard PC emulator



"Computers in business is about increasing productivity and, therefore, making money. As the owner of a small business, I know what gear will do the business."
Mark Smiddy

When KCS first introduced their Powerboard it was greeted with rapturous applause. Now that the beast has been around for some time a contender for the crown has arrived – but KCS has not been standing still: adding support for the A590 hard disk. It has also come down in price to just over £233 (accounting for the new VAT rate).

I've got the power

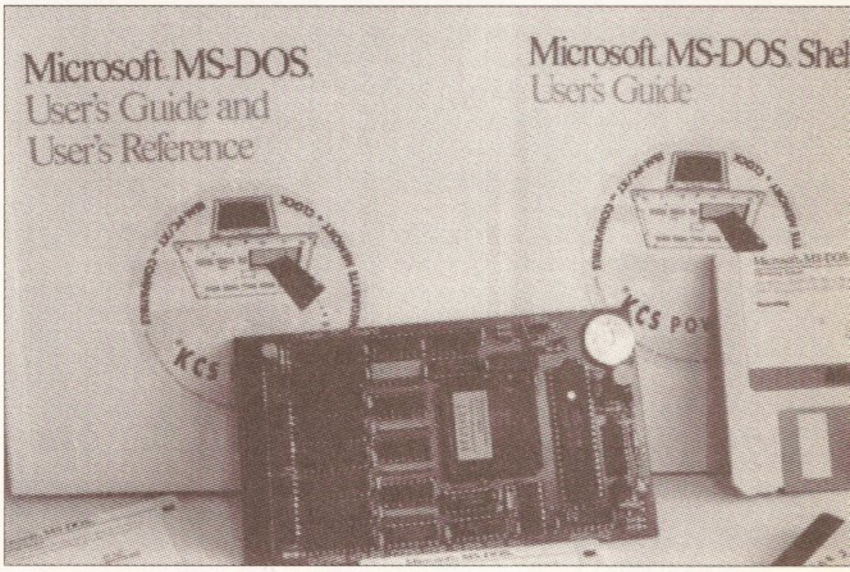
There cannot be many people who haven't heard of the Powerboard, but for those new to the machine, here is a quick round-up of the major features. Primarily, Powerboard is an IBM PC emulator based on an NEC V30. In theory, that gives it 100 per cent software compatibility with all existing PC software.

In practice, there are a few elite applications that refuse to run on anything less than a 386 with a 387 doing their maths, but these are in the minority. The vast majority of software written for the PC will run (up to a point) on the humble 8088; and for simple jobs like word processing these are generally all that's required.

Designed for the 'trapdoor' RAM slot on the A500, it comes with its own processor, 1Mb of RAM and a real-time clock. Running in Amiga mode, Powerboard adds a 512k of normal expansion memory and 512k private memory configured as a RAM disk. In PC mode, it acts like a 1Mb XT with 704k free memory and 192k of extended memory.

The snag is, Powerboard only 'runs' PC programs, all the I/O must be handled by the Amiga hardware and that is where the emulation part comes in. Everything from the keyboard to the screen has to be emulated in software – and this is one giant task.

Fortunately, it does mean all upgrades are supplied in software and don't involve having to crowbar your machine open.



There's a goodly amount of documentary support supplied with the KCS Powerboard. However, the emulator docs lag behind the hardware.

Installation

Installing the Powerboard is a snap. Just unplug your machine, remove the trapdoor expansion cover, plug it in and you're ready to go. It really is that simple and takes about two minutes – allowing enough time to plug all those peripherals back in.

> *"If you only ever use an XT clone, like the bottom-end Amstrad units, you may be hard-pressed to tell the difference."*

Once in place, starting first-time in PC mode is a simple as booting a disk – so anyone who can manage to load *Revenge of the Blasterons* could manage with this one. This first stage only starts the board and hands control over to it; from then on you are left in the strange and totally icky PC environment.

Powerboard is supplied with MS-DOS 4.01, so starting the 'PC' is simple – although you must replace the Amiga boot disk with a PC boot disk first. A dual-format Amiga/PC disk would be nice but is almost certainly impossible. (Yes, I know it can be done with the ST but an MS-DOS stores parts of its operating system in the boot tracks.)

Getting kinda hectic

Software installation is a little more tricky. Powerboard – like all soft/hardware based emulators – has a software interface between the Amiga hardware and the PC BIOS. This allows you to set up a variety of different parameters in the PC

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environment: the number of colours you get in CGA mode, the disk drives and so on.

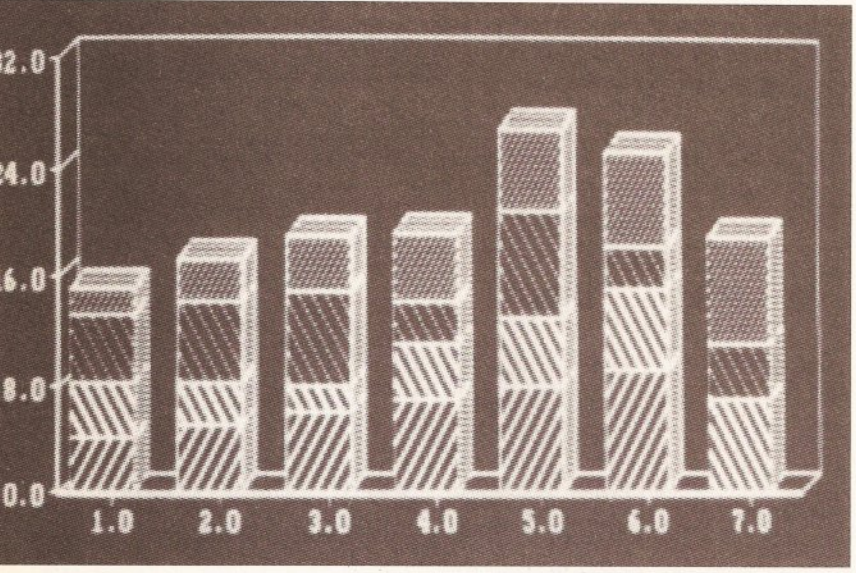
This would be OK if the installation software was a bit more helpful, but the software is evolving faster than the manuals. According to the manual, holding down the left mouse button brings up a language menu. This technique proved so unreliable I eventually had to run the PC preferences program from CLI; even then, the configuration refused to work. Curiously enough, one of the undocumented features was a Turbo button. According to Bitcon Devices, this increases the speed on some machines from 8 to 11Mhz, even though the manual says this cannot be done. Turbo is optional because about one per cent of Amigas refuse to run it.

Once running, the emulation's configuration can be changed by a simple hot-key combination not used on the PC. This brings up a setup screen allowing you to change colours and so on.

PC or not PC?

Powerboard, as I see it, will have two main users: those who buy it as yet another expansion and those who get it to run their PC software.

The PC crowd are likely to be in the majority, so out came that classic piece of PC Shareware, *As-Easy-As* 4. This is one of the best spreadsheets on the PC, boasting a high compatibility with *Lotus* 1-2-3 – and more powerful into the bargain.



PC-style graphics turned out reasonably well. In fact, most programs ran without any trouble whatsoever, but a few ended up crashing the PC.

JARGON BUSTING

286, 386SX, 386, 486: Increasingly powerful versions of the 8088 chip found in the original IBM PC and designed by Intel. The correct name (number) of each of these should be prefixed with '80', but few people ever bother. Intel even use the abbreviations as trademarks.

CGA: Colour Graphics Adaptor. Should be crummy graphics adaptor. Sick bags at the ready, CGA gives four colours from two fixed palettes in low-res, 320x200: cyan, white, magenta and black or red, green, black-and-white. The higher resolution mode: 640 x 200 is black-and-white only.

EGA: Enhanced Graphics Adaptor. Somewhere between CGA and VGA. Offers a higher resolution and better range of colours than CGA. Considered to be the minimum workable colour setup.

Hercules: Monochrome graphics and text card – found in many cheap clones but still quite workable.

MDA: Monochrome Display Adaptor. Just that. Text only with three states: off, on and high-intensity. This mode will do for word processing or data processing at a pinch and precious little else.

MS-DOS: Microsoft Disk Operating System. It's a bit like AmigaDOS – only many commands are internal. Shell editing is crude prior to Release 4.

PC Clone: IBM PC compatible computer based on one of the Intel 8067 or 80xxx series CPUs, and with similar hard/software configuration.

TSR: Terminate and Stay Resident. The nearest thing to full multi-tasking low-end PCs have to offer. It allows more than one program to reside in memory at once and be recalled by a hot-key.

VGA: Video Graphics Array. High-resolution colour or monochrome graphics system. 80 columns by 25 or 50 line text and a huge range of colours – sometimes 256 (on screen) at a resolution of 1024 x 768.

As-Easy-As supports a variety of screen modes, ranging from Hercules to EGA. It started in CGA (nothing surprising there) but come to draw graphics and none of the usual yukky CGA colours. The CGA emulation is interesting because of the way it has been done. Replacing the diabolical chunky characters normally associated with CGA, was (what appears to be) Topaz font.

Next, out came my favourite word processor – Arnor's *Protext* 5. The PC incarnation has some superb features like support for EGA and VGA 43/50 line modes and graphics – so if anything could give the Powerboard a pounding, it would be this. Word processors like *Protext* are a good test of screen update because you will spend a lot of time moving through the text.

As before, the Powerboard proved surprisingly usable. Although not quick, *Protext* behaved very much like it used to on my old Commodore PC-10. Not surprisingly perhaps, the graphics mode was less than good. However, it was interesting to note, the 43-line mode was supported, but only in graphics mode. This is a little strange because Protext supports 43 lines in graphics and text modes, and then only with EGA. Curiously, an interlaced display was present, as if Hercules was being used.

Although a good search of my hard disk revealed nothing old enough to only support MDA or Hercules, it did give me the opportunity to try out a number of different Shareware and commercial demonstration packages. Everything I tried ran perfectly, including TSRs, although a few crashed the PC.

Although this is a games-free magazine, I had to try a few in the interests of completeness *(oh, sure – Ed). Captain Comic* requires EGA and would not run, so that idea went out of the window. *Popcorn*, a French *Arkanoid* clone, worked beautifully in the grotesque CGA colours, as did *GlobWar*, a shareware *Risk* clone. *Insanity* – a maze game – demonstrated the staggering speed with which the Powerboard's software emulates the screen.

Fractious freeware

One final test of the screen support was offered by a Freeware application *FractInt. FractInt* is tailored to draw fractals like the Mandlebrot and Julia sets, only it's very fast and supports almost every graphics card under the sun. This confirmed that the board does appear to be fully compatible with IBM CGA.

The PC has a modular design lacking in the Amiga – certainly in the A500. For instance, the PC supports two printer ports and two (sometimes four) serial ports; the Amiga only has one of each. A lot of software makes use of these facilities. For example, many third-party mice plug into the one serial port leaving another for a modem. Also, internally the machine can a large number of expansion cards (my PC has a total of eight slots).

The Powerboard gets round these limitations in any way it can:

Disks: The PC supports a variety of formats, from the 40-track, 8 sectors, single-sided, 160K dinosaur to the latest 1.44Mb 3.5" floppies. Powerboard will support everything but the 1.44Mb (2Mb unformatted) drives because the Amiga's drives cannot run at half speed. Now 2Mb drives are coming on the market for the Amiga, it remains to be seen whether or not KCS will upgrade the software. In the meantime, it is, at least possible to read 40 track disks

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now commonly called the AT. But the clone makers were already hot on Big Blue's heels and just as soon as IBM came up with a new design, the clone makers had something better.

The clone war

As time progresses this becomes more and more the norm: IBM set a standard and everyone else makes something better.

Even the 8088/86 CPUs used in those early designs have been improved by one third-party. NEC's V20/30 are pin-for-pin compatible chips and use less time to execute many of the more common instructions. This, in effect, speeds the whole machine up a little.

BLITS

"Just to prove that there is more to Australian soaps than Kylie, Jason, Craig and Danni," writes Roy Startup, our antipodean correspondent, "I have noticed, after extensive research, that Paul Robinson, head of the Robinson Corp (Neighbours) uses an Amiga 500 to run the whole of his multi-national conglomerate. A damn good job it does too."

& BOBS

in an 80-track drive thanks to the double-stepping option.

Mouse: The Amiga's mouse port is redundant for the PC side of things, so the Powerboard simulates a Mouse Systems serial mouse addressable on COM1 or COM2.

> **"The PC is a computer for use by one person – even your brain is a very powerful personal computer."**

The mouse stays where it is and the software handles the tricky bit. Two caveats with this: a mouse driver is not supplied for the PC mode – so some programs will still be stuck with the keyboard. Second, there is no support for bus mice either. Bitcon Devices say the mouse should be left on COM2 where it will be compatible with either the Naksha or GMouse drivers.

Parallel and Serial: Only one printer port is supported by the Amiga's hardware, but the software ensures this can be addresses as LPT 1, 2 or 3. Similarly, there is only one serial port. This can be accessed as COM1 or COM2 at a maximum of 4800 baud; some metal-bashing PC packages are actually capable of 31,250 baud.

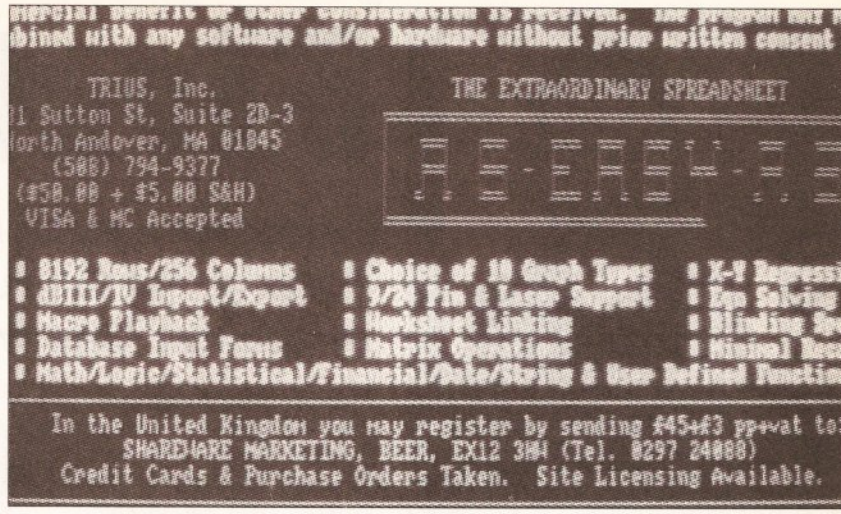
Joystick: Yes, even the PC can use joysticks. However, PC joysticks are generally analogue – not switched like most Amiga sticks. There is no mention of which type is supported by the emulation and I have not been able to find out.

Other Hardware:

Those expansion slots are going to be a problem. A large amount of PC hardware comes in the form of internal cards – hard disks, extra serial and printer ports and so on. There is no way to utilise these on an A500 because the 500 does not have the hardware – not even if you slap a Bodega Bay on the side.

The most important internal expansion is, of course, a hard disk. Many PCs come with one fitted as standard – usually about 20Mb these days. KCS has recently remedied this problem by adding support for the A590. Basically, this involves having to re-install the hard drive from scratch – adding an extra partition or reusing an old one.

Whichever way you look at it, this means giving up some space for MS-DOS to use – and 20Mb is not a lot to go sharing around. However, many applications will not run from floppy, so this was an essential upgrade. Hard drive support is very hardware specific, but KCS is in the process of adding new hard drives all the time…



Classic PC Shareware, *As-Easy-As* looks much more fun on the Amiga, with normally clunky characters rendered in the much sexier Topaz.

Dodgy installation

There is little to fault the KCS Powerboard – with the exception of the iffy installation software and dubious instructions.

This is countered by the excellent telephone support offered by the UK distributor, Bitcon Devices. Once up and running, the Powerboard turns the Amiga into an adequate (if not shattering) PC just by booting a disk. This cavil only applies if you are used to a fast 286 or 386 and expect the same kind of performance; don't. If you only ever use an XT clone, such as the bottom-end Amstrad units, you may well be rather hard pressed to tell the difference.

The Powerboard will never replace a proper PC, because it uses Amiga hardware, but if you need to run PC applications, it is a cost-effective and trouble-free upgrade. Updates to EGA (and possibly VGA) and support for other hard drives are expected soon. As this is all done in software, the fee is nominal to cover replacement disks and postage. AS

> **"IBM sets a standard and then everyone else makes something better"**

EMULATION SPEED CHECKS

A lot of wibble has been written about speed tests – Landmark, Drystone, Whetstone, Damprock, Moistpebble and so on – and a lot more will, no doubt, be written in the future. The fact is, no matter how fast an emulation manages to achieve in pure execution speed (with or without RAM access) what makes the difference is the screen update. This is the deciding factor: it doesn't matter if the thing runs 700 or 800 per cent faster than the 4.77Mhz IBM PC, unless the screen can be drawn quickly enough, few users will notice the difference. This problem is inherent in any emulation – whether it is hardware, software or a combination of the two.

For those with a thirst for absurd figures, here are the results:

Test	Powerboard	Powerboard turbo	AT 8MHz	AT 16MHz
Norton Index	3.6	4.4	7.8	15.6
V20 Timer	22MHz	29MHz	27MHz	57MHz
Relative PC	220%	240%	395%	805%

For comparison, I used my my bespoke 286 clone. The tests prove how statistics can lie. The Norton Index proves that the AT is a faster machine, but the V20 Timer also shows that, under certain circumstances, the Powerboard is faster than an AT clone.

Note that the AT timings are not applicable to the AT-Once. We'll be running that comparison next month.

CHECKOUT

KCS Powerboard

Features....................7/10
Plenty of emulation options and complete with MS-DOS 4.01.

Documentation.........4/10
MS-DOS documentation is plentiful – emulator documentation lags behind the product.

Stability 20/20
Faultless operation in PC mode from day one – very beginner friendly.

Compatibility 17/20
Most legal applications should be OK. Limited by Amiga hardware.

Speed 22/25
OK for applications intended for the PC/XT – amazing screen update.

Price 12/15
The cheapest XT clone ever supported by Amiga hardware.

AMIGA SHOPPER 82/100

Excellent – will take some beating.

SHOPPING LIST

KCS Powerboard............£199+VAT (includes MS.DOS 4.01 and GW Basic)

by Kolff Computer Supplies BV
Kuipershaven 22,
3311 AL Dordrecht,
Holland

UK supplier:
Bitcon Devices Ltd
88 Bewick Road, Gateshead,
Tyne-and-Wear, NE8 1RS
☎ 091 490 1919/1975

KCS Powerboard is distributed as XT Emulator in the USA by Pulsar.

First in line

As previewed in last month's Amiga Shopper, Jon Bates gives the full run-down on the impressive Sequencer One from UK software house Gajits



"I'm a professional musician, I know what gear is needed to get the right sounds at the right price and I'm here to pass my experience on to you so you know what the best buys are." Jon Bates

Coming in at a shade under £90, the main thrust of *Sequencer One* is that it should appeal to beginners and, therefore it's cost should reflect that. On the other hand it needs to have enough facilities to appeal to the slightly more aware.

It's always a tricky line to tread; how much do we give the punter for this price? Gajits seems to have the balance about right as you will see.

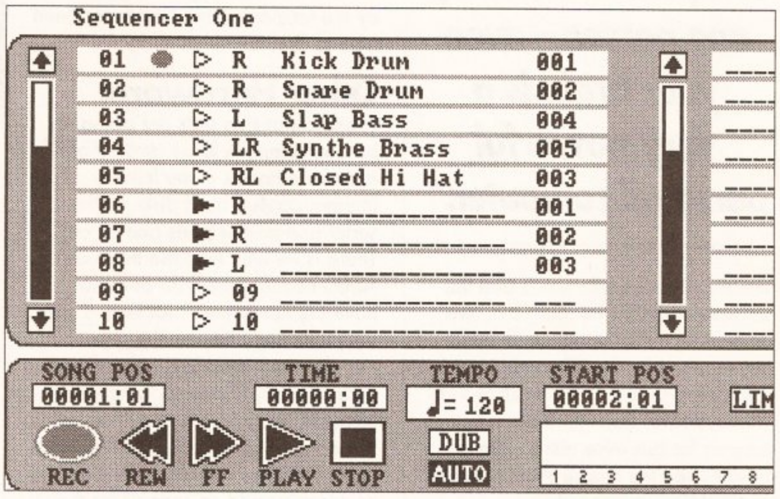
Good news week

The good news about *Sequencer One* is that it will run on the A500 and also supports internal voices. Four channels of internal voicing plus the 16 Midi channels makes up a total of 20 channels, which you could run simultaneously. However, for the beginner starting out, maybe without any Midi gear whatsoever, it is possible to create music using just IFF samples. A selection of IFF samples is thrown in with the package to save you the bother of hunting around and there are sets of pre-written patterns in lots of styles which you can pull in to start creating music straight away. More on this later.

After booting up and allocating the size of the chip memory – necessary if you want to run samples as well – the main screen pops up. This is split into three main areas: transport, tracks and cue sheet. Transport is laid out with the familiar cassette recorder icons with song position and time elapsed counter displays. The tempo, like many other numeric displays, is altered in two ways. You either click once and enter the value manually from the numeric keys or you double-click and move the cursor (now transformed into a pointing finger) up and down the screen. This is a Gajits trademark which was used in their Roland voice programming software and is a very fast way of entering and changing data when using the main screen displays. A click on left-hand button confirms the new value.

For the tempo setting there is a third, and rather smart, option. From the Options Menu you select Click Tempo; this lets you hit the mouse buttons at the speed you think the music should go at and *Sequencer One* works out the correct speed for you.Two main modes of recording on any track are supported. The ordinary mode deletes any data that was previously on the track whilst Dub adds on top of it.

Although not immediately obvious, you can get rid of the last overdub by hitting Undo in the Track Menu. Combined with the Loop facility, which cycles between the start and end positions chosen, this makes for handy practise for putting good solos, or any other part,



By sorting out the sounds to internal channels you can hear them and play them if you have a Midi keyboard connected.

together. The Auto button here is actually auto-rewind; if no limits are set, Stop takes you back to bar 0. I'm still not convinced that not having a count-in is a good idea. Although you can use any number of bars as your count-in before you start playing and it takes up no data space in the memory, it does seem odd having to always start at bar 3: it could also mean some fiddling around if you are trying to synchronise the Amiga with another sequencer: you would have to add two bars to the other sequencer pattern or delete the first two bars of each track after you have finished building up the music.

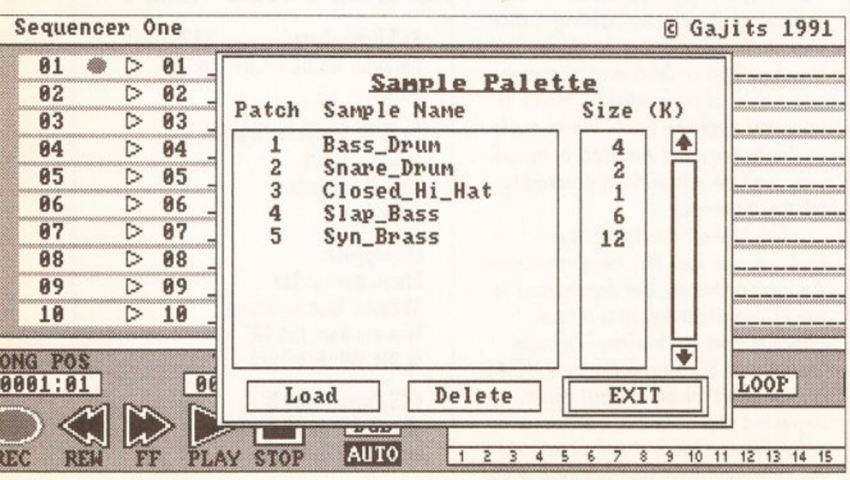
> **"To make the most of memory, there's a Strip/Thin operation letting you specify what data the track doesn't need."**

To the right of the Transport controls is what is termed the Midi Activity Meter. This actually gives you a visual representation of data either passing through or being output from the Amiga. It is set up on the 16 Midi channels and the four internal channels and does not correspond to the track numbers.

The Track display is the left-hand upper half of the screen. Although you can only see 10 tracks at any one time, there are in fact 32 tracks to record on and these are accessed by the scroll bar and arrows on the left. Tracks are active if the triangle is black and they are deselected by clicking on the triangle. Up to 16 characters can be used to name a track: double clicking on this area pulls up a detailed information window which shows exactly how many notes are used, volume and pan details and other sorts of data, like pitch bend and modulation are present. Midi or internal voice channels are set on the main screen and the figure after the track name is the voice number – known in the Midi code as the Program Change (but you knew that 'cos you read last month's article on Midi). The circle indicates the track that is currently being recorded on and is active for editing purposes.

Right on cue

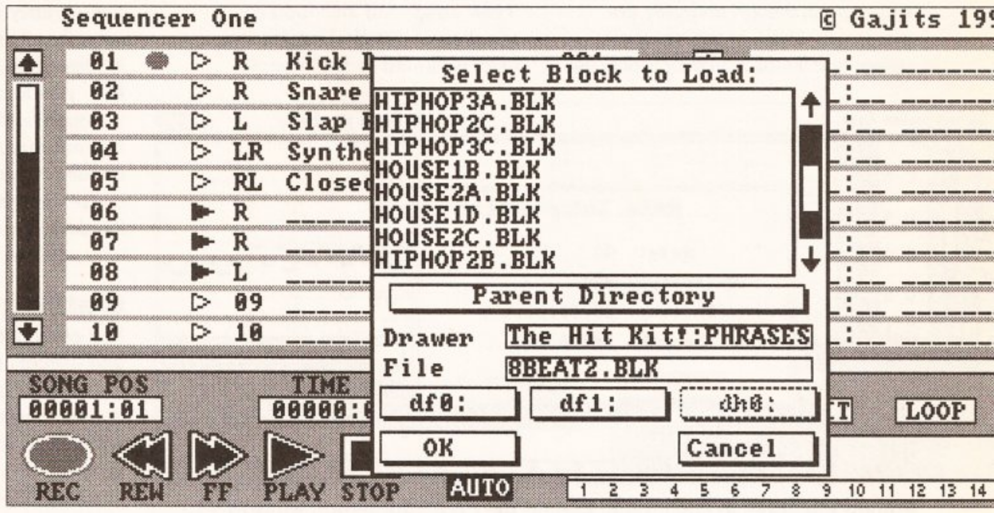
The Cue Sheet, referred to in the program as a Marker List, to the right-hand side of the upper screen is really a reminder note pad of where each section occurs. One neat little feature is that you can drag the bar position from the transport section up to this sheet by just double clicking on the counter and then placing it in



Pull the samples from the disk and give them Patch/program numbers.

the list. The reverse is also possible; when your cue list is full of lots of named sections you can jump to that point in the song by double clicking on the marker list counter.

One of the prime areas of importance in any sequencer is the Quantize option. Available from the Track Menu, Quantize is kept fairly straightforward here and is applied to the track with the record icon against it. From a basic set of note values one selection can be chosen to line yours up against, although it is possible to use any quantization interval by altering the number of clock ticks. Only two options are on offer; 'keep note length' or 'keep note off time', which either move the note completely or just the starting point. It would have been nice to see a 'quantize strength' option which would mean that notes were not exactly lined up but had a degree of flexibility to keep them from being over precise; this adds 'feel' to many a track and I guess it's an option Gajits should bear in mind for a future update.
The 'Undo' from the same menu will remove the last quantize operation if you didn't like it. From this menu you can transpose the whole track, tidy up unwanted notes, shift a track forwards or back in time – useful for creating 'echo' effects with a duplicated track – scale the velocities up or down so that the sound has a greater or lesser impact and even alter what is called 'continuous data'. 'Continuous data' is data output (and recorded) from controls such as pitch bend, after touch, modulation etc: all these parameters can be altered.



Loading from *Hit Kit*: there are literally hundreds of styles, phrases and drum patterns for you to choose from.

Twin options

For all these alterations, Gajits has chosen to give you two options. You can either add a specific value to each parameter as recorded or you can have a 'scale' option which multiplies the note/event/data by the factor you define. In the case of altering note timing (called 'event time' in the menu) this can make one section of music squeeze up or expand to fit a specified time, and with two decimal places of accuracy you can be pretty specific! Quite often there is Midi data superfluous to requirements; say you have after touch data recorded on a drum track or velocity sensing on an organ both of which are not used with these specific sounds.

To make the most of the memory you have a Strip/Thin operation which lets you specify what data the track doesn't need and within what areas it can be dispensed with. 'Strip' gets rid of all the data whereas 'Thin' takes every other occurrence of the data which you might use to economise on pitch bend or velocity data. From the menus there are other options. 'Metronome' sets up either an audible click or a user-defined Midi note number and channel. Midi data can be filtered as it enters the Amiga and/or can be redirected to other functions: aftertouch could be reassigned to another area under Midi control, for example Pan.

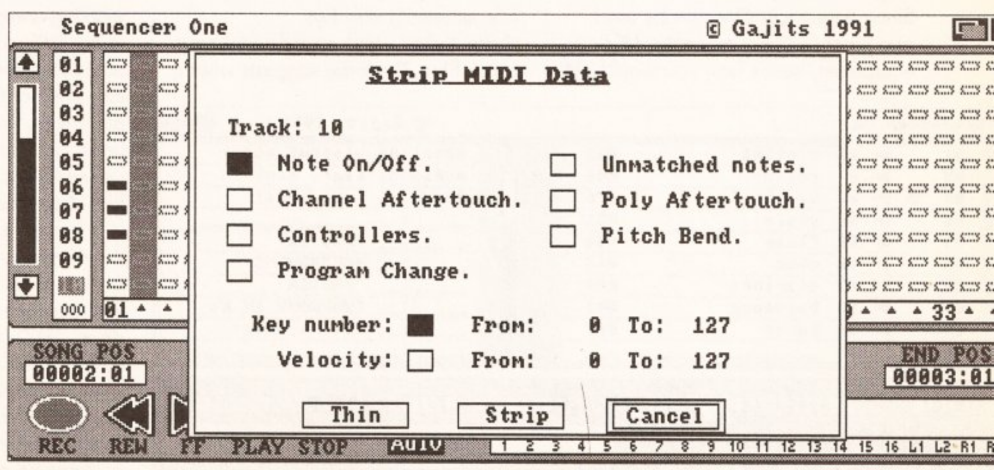
Sequencer One is also well equipped to synchronise with external devices, such as other sequencers or drum machines, by either controlling them or becoming a slave to their controls. It will also save and import songs in Midi file format, which enable it to be loaded up into any other Amiga sequencer that will load this common format, Some synths don't always respond to the 'note off' Midi control and so there are optional messages that the 'Stop' control can send on individual channels so you aren't left with notes 'hanging' when you stop playing or recording.We have looked at most of the features of this software but have excluded the most important; editing.

There is only one way of editing actual notes. The graphic 'piano roll' with keyboard turned through 90 degrees shows the notes as blobs/oblongs scrolling from right to left and an upright scroll bar shifts the range of notes displayed to accommodate the full ten octaves that Midi allows.

Drag factor 0

Sadly you cannot drag them about but have to click on each one and alter it in the information window that pops up and, unlike editing pages in other sequencing software, you can't hear the notes you are manipulating. Not a quick way of editing but quite secure nevertheless. Deletion of notes is handled in much the same way:

continued on page 72



The Block Edit screen. The one-bar pattern, loaded from the *Hit Kit* is now copied onto tracks 6,7, and 8. You can see these just to the left of the Strip/Thin window which is being used to weed out all those unwanted notes for the drums.

BLITS & BOBS

The late Russian composer Igor Stravinsky had some heartening words for advocates of sound sampling: "A good composer does not imitate; he steals."

JARGON BUSTING

QUANTIZE: The process of finely altering the timing of individual notes, perhaps because they have been inaccurately entered 'live', to bring them in line with the beat of the music.

MULTI-TIMBRAL: The ability of a synth to play different notes using different voices (or timbres) at the same time; for example, one that could play a drum sound, a bass and a piano.

SEQUENCER: A piece of software on a computer (or sometimes built into a keyboard) which stores musical scores and transmits this information in real time via MIDI to synthesisers which will then play it. Some sequencers have the facility to receive and memorise MIDI information from a music keyboard so that music can be entered 'live' instead of note by note.

PITCH BEND: The ability to vary the pitch up or down of any note by using either a wheel or joystick type of control mounted on the synth, usually to the left of the keyboard.

MODULATION: Often controlled by either a second wheel or side to side movement of the joystick. This will alter the sound according to the way it has been programmed; usually in the form of a vibrato – the note wavers in pitch and the amount it does is controlled by the Modulation control.

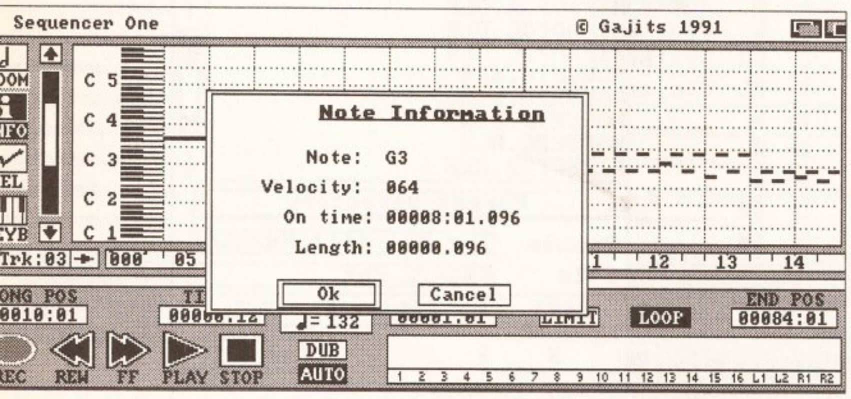
PAN: Corresponds to the Balance control on your stereo system – moving the sound from left to right. Midi is able to control this and position the instrument or move it about provided that the output from the synth or module is stereo!

VOICING SOFTWARE: Software that 'talks' to the sound creating section of a synthesizer or tone module and creates new sounds and multiple patches (combinations of sounds on different channels), This is usually combined with a library/database form of sound storage and graphic display of waveforms; often with automatic voice creation.

continued from page 71

engage the Delete function and click the notes out of existence.

The grid size can be 'zoomed' for close work and step entry is via an overlayed screen keyboard but you cannot hear what is actually played as you enter it. You can flip from track to track without returning to the main screen though and play the piece as a whole as the transport screen is still visible although only the track number is displayed and not its name, instrument and/or Midi channel. Block editing is the means of cutting, pasting and deleting sections of the music in a macro sense as it gives you an overall picture of the tracks and how they are filled; again you scroll to see all the tracks. Maybe it would have been an idea to somehow have the cue sheet visible as you can get a bit lost with this sort of editing when you add new sections and copy or insert other sections and it would have been handy to see the names of the individual tracks.



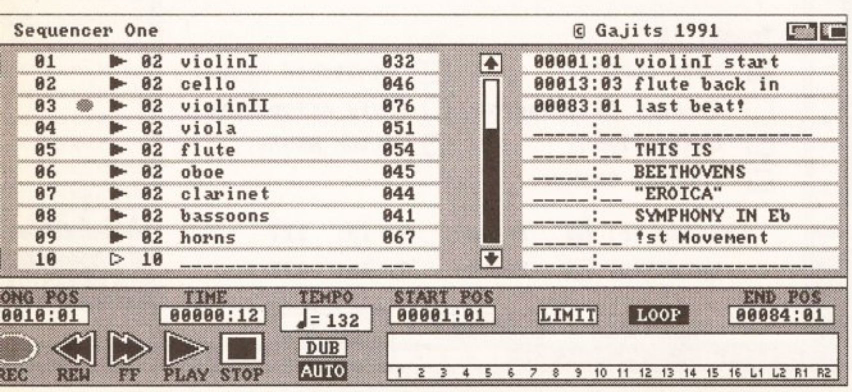
Editing the notes in each track: behind the note information window you can see the grid with the notes represented in 'piano roll' style.

Dicing with data

Data is chopped, put into the clipboard and copied either all together or track by track and individual blocks can be saved and loaded, a feature that will come in very handy as you will soon see. Since *Sequencer One* can be used, at a pinch, without any extra Midi equipment, here's how you would get started without too much trouble. In doing this you will be able to see the editing and block copying manoeuvres first-hand. If you're thinking of buying this program, keep this copy of *Amiga Shopper* handy when you start using it.

First of all, clear out any superfluous bits of music by hitting 'New Song' and then load a selection of sampled sounds into what is termed as the 'Sample Palette'; the size and number of samples you can load in depends on the memory space you have allocated, size of each sample and what memory you have available. It is worth remembering that instruments like drums usually take up less memory than, say, the piano. Each sample is allocated a program number. Back on the track page define which channels will be active. The choice is either left or right and then priority left or right. What each track plays is determined by which program number you choose. Although you can't enter notes from the QWERTY keys, unlike some programs (another option for the update, lads?), there is a free disk called *The Hit Kit* that comes bundled in with the software.

This has a whole host of phrases, loops and sequences in lots of different styles. Each file (*The Style File*, anyone?) also has characteristics such as style and type in sub-files. The latter suggests what it should be used for: chord, bass etc. They are not complete pieces of music but make up a very flexible version of the built-in accompaniments found on the self-accompanying variety of single keyboards. The manual comes in a text file and explains in detail how to get the best out of it. *The Hit Kit* is aimed really at the Midi user and is actually set up for the Roland drum kit, the same as the new General Midi standard, but it is possible, although fiddly, to adapt it for the internal samples. It would have been an idea to have part of *The Hit Kit* set up for the internal samples: some of the demo tunes use the samples so why not *The Hit Kit*?



The main screen now full of Beethoven's funky third symphony!: the cue sheet on the right lists the main sections.

Getting started

First of all, load up a few samples and allocate them program numbers.

A good tip here is to Save Setup on your copied program disk as it will automatically boot these samples up every time.

Next, dive into the track page and name each instrument, allocating a voice channel and correct program number. Put *The Hit Kit* in the drive and now select Block Load. Using a spare track, load up just one bar of drums – most of the patterns are only one bar long anyway. This puts the pattern into the Clipboard, ready for Cut and Paste operations.

Moving to the Block Edit page, which gives you an overview of all the tracks and whether Midi data is present on any of them. Paste the Clipboard into bar 1 of tracks 6, 7 and 8.

The first problem to overcome is that the drums are put together on one track. We have to separate them out into three tracks: bass drum, snare drum and hi hat. The more observant of you will see that I have named the bass drum a 'kick' drum on the screen. I got into this habit some time back as it saves me getting it confused with a bass guitar or other bass instrument when working away at full tilt. By jumping to the Edit screen and clicking on the notes displayed on the editing grid, I can see that the bass drum is the note B0. Diving into Strip/Thin delete all notes above this number (C1 upwards). I am left with a track of kick drum beats.

The same process is repeated for the next two tracks so that I isolate each individual drum; you have to do this process twice to isolate the snare drum. This is the most complex part of the operation. Once you have sorted out the drums for the internal samples, and this may involve altering and transposing the notes up or down an octave to get the best sound, you are on your way. Minor corrections can be altered with the editor and step editor functions. You should then have a one-bar rhythm pattern which can be copied and repeated as much as you like using block operations. Other patterns can be assembled and strung together using both note and block editing.

Summing up

Whereas *Sequencer One* is not the omnipotent tool that has features falling out of every menu, it has more than enough for you to perform everything you should need to do and I found that there was nearly always a way of getting around what seemed to be a problem. So far as I could tell, it will multi-task quite nicely with voicing software although the voice changes that you make are not recorded by the sequencer.

All things considered, it has to be *the* budget priced sequencing software for the Amiga at the present moment. And if you get completely stuck when operating it, then Gajits very kindly offers a helpline service during office hours. Nice. AS

Shopping List

Sequencer One £89
by Gajits Music Software
I-Mex House,
40 Princess St,
Manchester
M1 6DE
☎ 061 236 2515

Checkout

Sequencer One

Documentation 16/20
Well written and comprehensive and helps the first time buyer quite well with an overview of sequencing and MIDI.

Functions................15/20
Has all the functions you could reasonable expect without becoming exotic.

Speed 17/20
Editing a bit slow in operation but all functions actually work so fast that old 'zzzz' hardly ever appears.

Ease of use.............17/20
Nice simple layout means that it is easy to get to grips with.

Price 18/20
Just about pips the competition in price and offers the same if not better facilities.

AMIGA SHOPPER 83/100

With the support of internal voices, IFF samples and *The Hit Kit* thrown in, coupled with it's clear presentation and approach, *Sequencer One* deserves to be part of every Amiga owner's music software.

Think about it

MARK SMIDDY checks out Thinker 2 – Poor Person Software's own vision of hypertext for the masses



"Claimed to be the most recent development in computing, hypertext is set to revolutionise interactive learning, but can it? I'll be here to tell you what it is, what it does and what it means to you, and bringing you all the latest news as it happens."
Mark Smiddy

BEGINNERS START HERE

Hypertext is a really dreadful buzz phrase, probably coined by some pseudo-intellectual to describe the computerised form of a cross-reference. The idea is not new – dictionaries and reference manuals have been using the system for years. If you arrived at this description by reading the cross-reference in the Jargon Busters glossary, you made the manual equivalent of a hyperjump!

In the same way, many of you will have arrived at this review by locating it on the contents page – an outline of the contents. So, you read the outline, made a hyperjump to the beginning of the review, browsed through for the Jargon Busters, and finally made another hyperjump to the start of this. Some of you will have browsed through the magazine and got here directly.

As you can see, any good reference manual or well-organised magazine, such as this, consists of many outlines and cross-references. In that way, the reader can study the things he or she needs to know quickly and skim or ignore the uninteresting or irrelevant to them. Hypertext experts will probably ignore this panel (or glance at it out of curiosity).

So what, you may wonder, is the point of all this hype about hypertext? The best way to explain this is by a graphic demonstration. Go to the

continued on page 74

Thinker is a hypertext engine so if you have never heard of hypertext, nip to *Beginners Start Here* for a quick introduction. Hypertext, as we all know, is a form of word processing, by which documents can be read by subject rather than linearly. Moving through a hypertext document is all about selecting something that interests you and letting the engine search out and display the references.

So, beginners reading this review on a hypertext word processor could simply click Beginners Start Here and the program would whizz them off to an introduction on hypertext.

Hyper market

Hypertext processors, such as *Thinker*, are aimed at two sorts of people: users and creators. The idea is that the creator uses the engine to write a hypertext document, then the user loads the document and uses it. This has worked very well for similar systems like *Hypercard* on the Macintosh. The question is though, can the less well-known *Thinker* get the same foothold. One distributor described it as "belonging to a limited market sector" though he probably meant it won't sell.

As a word processor, *Thinker* can only be described as being slightly less than crude. Layout and formatting options are not available, although a word wrap is available which makes it better than the editors supplied with the system. A spelling checker is supplied, but only has a tiny dictionary of just 30,000 words stored as a hash table.

This method is very compact but it will occasionally miss a misspelt word – about one divided by the number of words in the dictionary, or 1/30000 – so that is unlikely to be a real headache. Adding user words to the dictionary is painful and Poor Person Software recommends no more than 10,000 words should be added. If you have one, a good word processor, *Protext 5* for example, would be better for authoring the text.

Hypertext processing is where *Thinker* really comes into its own because this, after all, is what it's designed to do. Links are inserted in the text by delimiting them with < and > from then on the link is active. However, a link is no good without something to link to – a statement.

Statements are introduced by double-clicking the right mouse button – which pulls up a quick menu – deciding where the statement should go and adding it. In theory at least,

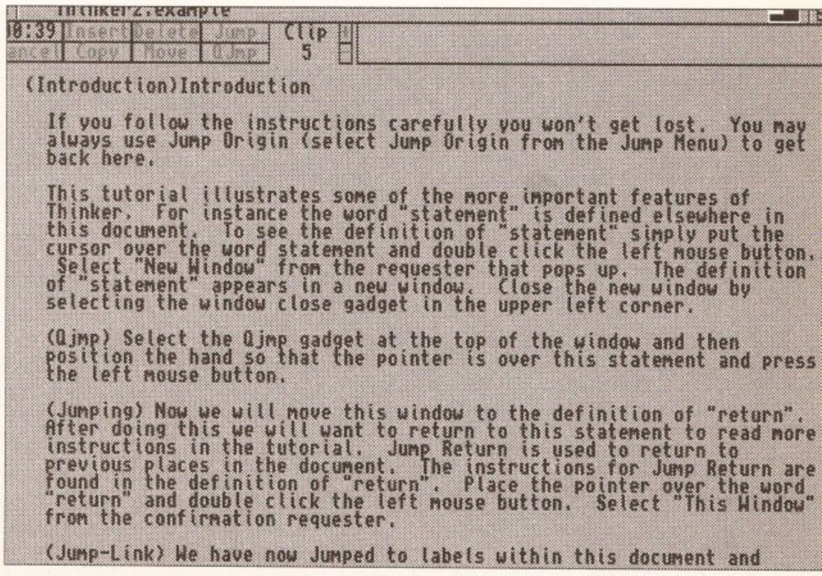
continued on page 74

BLITS & BOBS

Pure hypertext can trace its roots back to Doug Englebart's work at SRI's Augmentation Research Laboratory – however the quintessential idea has been around almost as long as the published word.

OUTLINE 1 (no clipping active)

Outlining
Clipping
What is clipping?
In an outlined section <Section> the clipping level is used to determine how much information is displayed. If clipping is set to one, only the main headings will be shown. Set to two and the headings and their subordinate headings will be available – along with any subordinate text at the same level.
How to use clipping
Organising your ideas
In this section you will learn how to organise your thoughts, ideas, expectations and desires for a better life.
What ideas?
That's a good idea!
Setting clipping levels
Printing
See Jargon Busting



***Thinker* does not have the flashest on-screen display you could ever wish for, but then it's not the most expensive piece of software either.**

JARGON BUSTING

Clipping: In an outlined section (see Outline) the clipping level is used to determine how much information is displayed. If clipping is set to one, only the main headings will be shown. Set to two and the headings and their subordinate headings will be available – along with any subordinate text at the same level. The number of clipping levels and their affect on the text are determined by individual applications. Outlines 1 to 3 may give you a better idea.

Hyperlation: A run-time module created by a hypertext or hypermedia application package.

Hyperjump: A direct jump to a hypertext reference. See Hypertext.

Hypermedia: Hypertext document with pictures, sound and even new applications embedded within itself. This review is a form of hypermedia. The illustrations on these pages are referenced by indices in the text.

Hypertext: A text processor with hyperjump facilities – see *Beginners Start Here* for an in depth discussion.

Hypertext engine: Software used to drive a hypertext application.

Label: The opening text at the start of a hypertext statement. Each entry in this glossary can be thought of as starting with a Label. See Link.

Link: Embedded at any point in the text, links are used as pointers to labels. See Label, is a link to somewhere else in the glossary.

Outline: A group of subjects organised by type (usually). Each outline has a heading describing its contents. For instance, *Jargon Busters* is an outline for this glossary. Similarly, the contents page is a simple outline of the articles in this magazine. Embedded in the contents, are outline headings for articles by group: Features, Reviews, Tutorials, Regulars. Open sections of outlines are usually indented to separate them from the rest of the text. See Clipping and outlines 1 to 3.

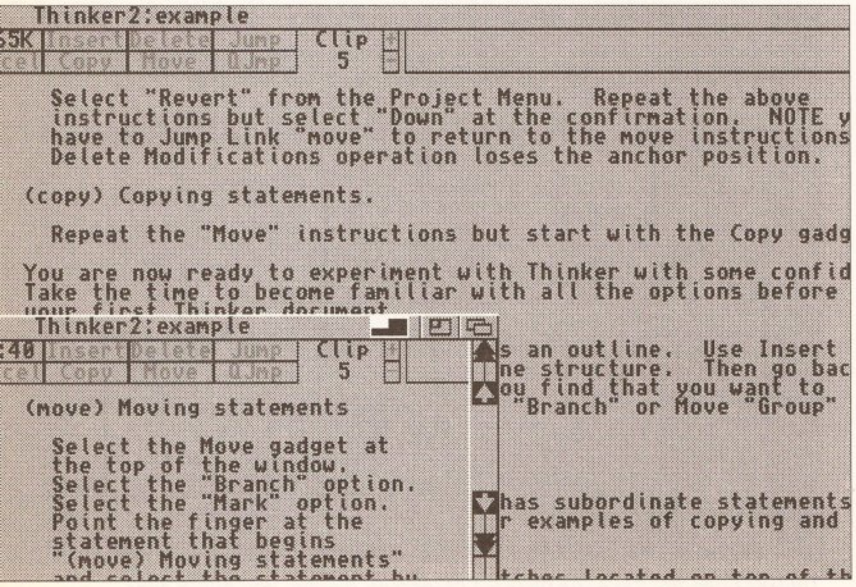
Plex: A group of statements and any subordinate statements embedded within them. It probably derives from plexus which is an intricate arrangement or network. Plex also sounds like flex which is very spooky and is the first syllable of the word plexor, which is probably what the editor will use on this writer when he reads this.

Statement: Thinker term for a block of text – a paragraph. Statements are preceded by a Label. See Label, Link.

continued from page 73

every word in a *Thinker* document can be a link. However, the use of angle brackets as link delimiters, besides being ugly <see ugly>, <see what I mean>, can be replaced by highlighting in one of several styles defined by the program. Many links can point to the same statement, and it is even possible to have statements with the same link name. In this case *Thinker* pops up a requester showing a small section of text from each statement and asks you to choose the one you want.

When you click on a link, *Thinker* brings up another mini-menu, asking where the statement should be displayed: this window (the current one) other window (if one is already open) and new window. Up to eight windows can be opened at one time; each showing a different statement. This is fair enough, but *Thinker* displays a window full of information for every statement link it resolves.



Quirks freely abound in the user interface, which is a wee bit daft considering the easy-reference ethos fundamental to the idea of hypertext.

OUTLINE 2
(Level 3 clipping in operation)

Outlining
- **Clipping**
  - **What is clipping**
    In an outlined section <Section> the clipping level is used to determine how much information is displayed. If clipping is set to one, only the main headings will be shown. Set to two and the headings and their subordinate headings will be available – along with any subordinate text at the same level.
  - **How to use clipping**
  - **Setting clipping levels**

Printing

This is often rather confusing because several statements, and therefore a lot of needless information, can be displayed at once.

Thinker links

In *Thinker*, links can point to more than just other statements in the text. IFF pictures can be displayed either in a *Thinker* window – where it is limited to four colours and the size of the window or in a separate screen. A Workbench tool or project can be attached to a link, provided it has an icon; this being a limitation of Workbench, not *Thinker*. Links can also be attached to an ARexx port or a CLI window.

> **BLITS & BOBS**
>
> *Thinker gets its name (and logo) from Auguste Rodin's famous sculpture, The Thinker, which he created around 1905.*

Assuming all this works as its supposed to – and to be fair, everything supplied with *Thinker* worked fine – then the system can be considered a true hypermedia sub-system. I would hesitate to call it a complete system because it lacks several key features. For instance it cannot play IFF animations, sound samples (or music, assuming someone wanted to), though it can call external software to do that. Also, there seems to be no way to communicate a mouse position back to the program, even using ARexx as an intermediate port.

But why would you want to? Well imagine you wrote a hypertext document explaining the workings of an internal combustion engine. That is a typical case in which diagrams

continued from page 73

contents page of the magazine, locate this feature in the reviews section and turn to its first page.

Welcome back. If you followed those instructions, you just lost your page, found it and came back again. You probably found this part of the Beginners section by remembering where you were. Now turn to the AmigaDOS feature and read the beginners section.

Back again? Still with it? As you can see, as a publication contains more and more cross-references it becomes increasingly difficult to keep track of where you are, let alone remember what you have just read. Hypertext gets around this problem by keeping track of each reference and possibly displaying more than one at a time. Just as you would in a book or magazine, you retain full control over what you read and what you ignore.

Real world media

A Chinese proverb states, "One picture is worth a thousand words". Whoever wrote that must have devised the Chinese alphabet, but the saying holds nevertheless. Very frequently authors punctuate their text with graphics. 'See Figure 2.4.3' for instance might belong to figure 3, in chapter 2, subsection 4.

When the text is written, that figure probably sits on the same page, but in the finished article it could be almost anywhere! Colour 'plates' are rarely inserted on a page of text, more likely they will be bunched together somewhere else in the volume. Now you have to go scooting off to find the darned thing – wouldn't it be better if the picture was among the text it related to? This is the sort of thing hypertext engines are good at. Just select the reference and it is displayed.

In a well laid out book or magazine, you would rarely have to skip more than two or

three pages. But wait. Let's imagine you're writing a book on ornithology. You could have pictures of the birds, the descriptions of habitat, mating rituals etc. What if you wanted to show how a bird flies?

A series of diagrams would do – accompanied by a fairly lucid description. However, an animation would be much better. It could be done in a book by flipping pages quickly, but that is not very effective. A hypertext engine could play the animation by calling an application to do the job. This could allow 'readers' to study the flight in detail, adjust the speed or even play it backwards.

Now comes the crunch. How do you describe the mating call of a song thrush in words or pictures? You could put a tape in with the book, but hypertext comes to the rescue again because a reference could easily be attached to a sound sample.

Who needs it?

Judging by that description you might think hypertext is the best thing since diced carrots, but not everyone agrees. Although the idea is an old one, realistic implementations are only just coming out. The first biggy was the Macintosh application, Hypercard. Since then there have been a rash of similar things – *UltraCard, Thinker, DUNE* and *Can Do* to name four. *Thinker* is the simplest and follows the idea of hypertext more closely than the others which are more graphics oriented.

However, some are of the opinion that computerised hypertext is a bad idea. You know where you are just by looking at the page number of a book. Thumbing it has a more personal feel than skimming a hypertext document. It can also be argued that a book is more portable. Although a massive hypertext document can be fitted on a single disk, it still needs a computer to run on.

OUTLINE 3
(Level 1 clipping operating)
Outlining
Printing

are required. So you click on the diagram link and up pops the picture. Now let's assume Joe Bloggs wanted to know about valves. At the very least Joe should be able to click in a 'bounding box' on the picture and get taken to the description of valves. This might be possible with *Thinker* if you used, say, *AMOS* or *GFA Basic*, to handle picture and getting the mouse reports. Then you could use ARexx to pass the message back to *Thinker*. Lost? Programmers might be able to follow that, but the sort of users *Thinker* is aimed at are unlikely to be able to.

On the good side, Poor Person Software does supply an adequate tutorial in the otherwise fairly short (96-page) manual. They also give away *Tinydraw* – a miniature drawing package. Like *Thinker*, it's anything but flash – but it does the job of producing simple little

BLITS

Hypertext references are just an electronic version of footnotes or cross references.

& BOBS

sketches. Being object-oriented, it's easier to use for multi-thumbed artists like yours truly.

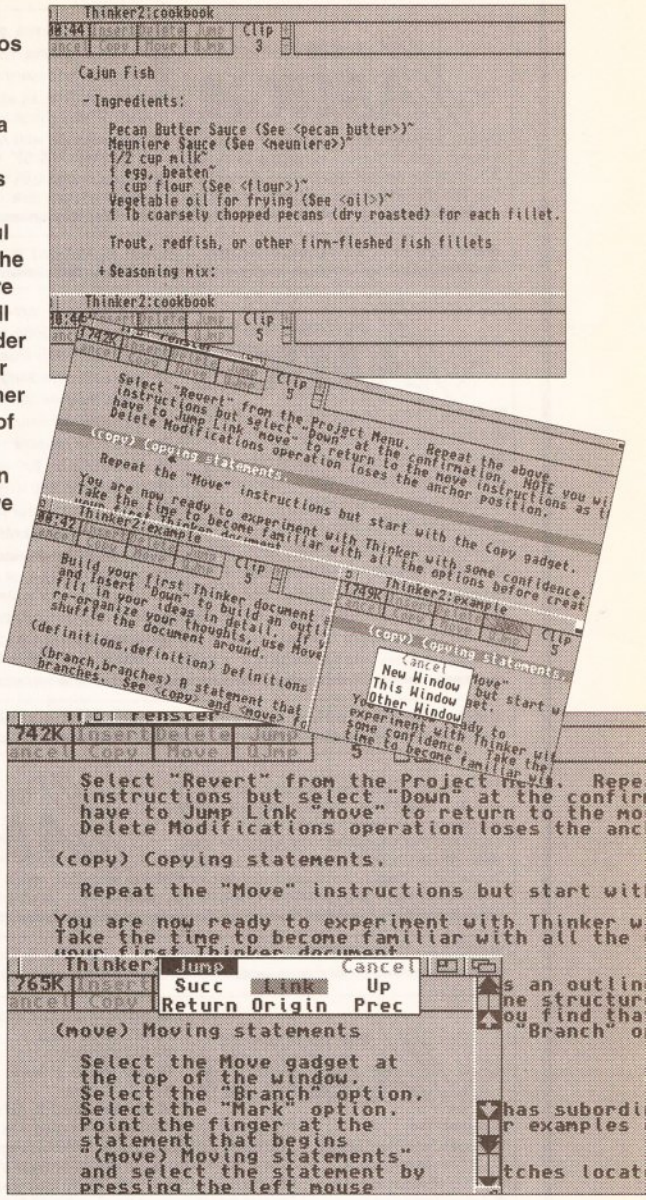
Best of all, they give away loads of little demos showing how the package works with examples of just about everything from a miniature database to a cookbook with some interesting recipes (cordon bleu Smiddy strikes again). Most examples are contrived to illustrate a point but are nevertheless very welcome. It makes my blood boil to receive a 300 quid package, with a 2000 page manual and no examples whatsoever. For this, Poor Person deserves a hearty pat on the back.

Well thunk out

Thinker is a great idea, or at least a reasonable attempt at implementing a good idea. The biggest fault with the package lies in its most important feature – the user interface. Although the main display is easy enough to use, the gadgets surrounding it are tricky to get to grips with as there are just too many of them. The designers could learn a lot from simple text viewers like *PPMore*. It works with Workbench 2 (just) which is a bonus for those who have it, but the additional window zooming gadget still appears on the new system even though it is already present in Intuition. Since it is Workbench 2 compatible, the file request needs work too.

It is not particularly fast, but usable provided you create your text in a proper word processor. Poor Person Software recommends using FACCII a (cache-based) disk accelerator to help speed disk access. I have not tried this, but even using FFS on a floppy I did not notice a great improvement. All this aside, *Thinker* does a reasonable job of hypertext without the frills. It is not an absolute must-buy. More worth thinking about really. AS

A good feature is the welter of demos supplied with the package, from a mini database to a cookbook. Hypertext novices should be able to glean much useful instruction from the way the demos are organised, but will have to think harder when putting their own tomes together as the profusion of gadgets that surround the main display could have many going back to their joysticks for a quick game of *Braindeath from Another World* in shock.



SHOPPING LIST

Thinker 2.1 .... **$80**
Poor Person Software
3721 Starr King Circle, Pala Alto, CA 94360
USA ☎ 0101 415 493 7234

Not generally available in the UK, but **Creative Computing**, of 4453 Redondo Beach Blvd, Lawndale, California 90260 (☎ 0101 213 214 000) charge an extra $30 carriage to send a copy.
Otherwise, try:
HB Marketing
Unit 3, Poyle 14, Colnbrook,
Berks, SL3 0DX
☎ 0753 6800363

CHECKOUT

Thinker 2

Ease of use............10/20
Quirky user interface hampers the whole idea of hypertext.

Features.................10/20
Nothing flash, but at least it supports ARexx and Workbench 2.

Documentation.........7/15
Thin on the ground with no illustrations to back it up.

Presentation............4/10
Looks cheap, because it is cheap.

Speed 5/15
Slow from floppy disk – but usable if you can wait.

Value: 7/20
The user interface could really do with more work to make it worth the money.

AMIGA SHOPPER 43/100

Still looks basic, still tricky to learn. Not bad, but not brilliant.

commodore

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B2000 + XT Bridge Board + 20MB autoboot hard disk £1195!

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A2088 PC-XT board & 5¼" drive	£225
C2058 8MB Board, 2MB installed	£196
RAM for above, per 2MB ...	£72
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Rat race

Mark Smiddy checks out yet another brand new hi-tec rodent

Mice come in a variety of types and there has been a recent spate of them since the success of Naksha's. The Truemouse is aimed at the budget end of the market.

Outside...

From the outside, Truemouse looks very much like every other recent design. Smooth curving lines make it pleasing to the eye and comfortable in the mit. The two buttons hinge about two-thirds from the back of the case and drop over the front where they blend in nicely. The 1.8-metre cable leaves plenty to spare and is terminated with a small cable grip.

Underneath, the unit is switchable for both Amiga and ST, avoiding the need for adaptor plugs. There are four little Teflon pads, allowing the rodent to glide over almost any surface. However, they could wear out faster than the larger ones found on other designs.

The Truemouse achieved a resolution of 200 DPI – adequate but nothing special at the price. This means a movement of 3.25" to move the pointer across the screen.

Internally, some savings have been made. The circuit is based on low cost transistors instead of the normal integrated circuit. The choppers are standard enough, but only one LED/LSD pair is used for each direction, whereas the Naksha uses two. This accounts for the reduced resolution. Also the small idler wheel was prone to slipping its mounting when the unit was uncased. A minor point? In normal use this is unlikely to happen, but if the unit was dropped or bashed this could render the entire mechanism useless.

The two buttons impact directly with the microswitches instead of a lever mounting, which suggests that they are of low quality and prone to wear, and that the plastic pins will wear away in time and give rise to the same thing. Finally, the cord grip at the end of the case looked a little flimsy, so I was tempted to give it some stress testing. But that can wait for the complete rodent round up.

The Truemouse has its faults, like anything else. Economies have been made here and there, but these have been passed to the consumer.

It is not a cheap product hiding under an expensive case. It is most definitely a budget mouse in an attractive one – and for those on a tight budget, it's worth it. **AS**

JARGON BUSTING

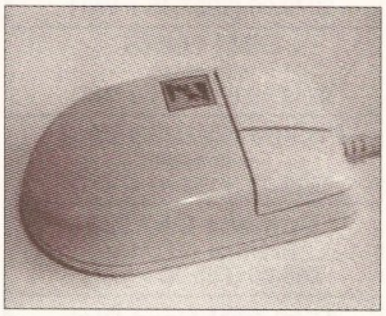
Chopper: (Also known as an interrupter). A small spoked or slotted wheel which interrupts the light from the LED. As the chopper disk rotates (caused by moving the mouse) it makes the LSD pulse. Count the pulses and you can work out how far the mouse has travelled! (Direction coding is a little more complex.)

LED: Light Emitting Diode. Small semiconductor device which emits light when a current is passed through it one direction only.

LSD: Light Sensitive Diode. Like an LED, only this one only allows current to pass when light is shone on its surface. LSDs are sensitive to light of different wavelengths and are usually matched to similar LEDs. They work just like a very fast, light-sensitive switch.

SHOPPING LIST

Truemouse.......................£17.95
distributed by **Zydec**
☎ 0386 45999
available from most major distributors



A mouse that goes cheap? What on Earth is the world coming to.

CHECKOUT

Truemouse

Ergonomics 18/20
Very comfortable with a nice glide.

Style 4/5
The ST/Amiga switch gives it the single-lead edge over, say, the Naksha.

Accessories 0/15
Just a mouse sans accoutrements.

Buttons 20/25
The oversized selection button is a nice innovative idea – but a little spongy.

Resolution 4/10
At 200 DPI it is on the poor side.

Value 22/25
It performs well for the money.

AMIGA SHOPPER 69/100

An attractive budget mouse that should do well as a replacement for the old model.

Sounding off

Mark Smiddy gets down to some serious eardrum bashing with the ZyFi amplified speaker system

Few Amiga owners could have failed to notice the phono plugs located by the joystick ports on their computer. Usually these are connected to a stereo monitor or hi-fi. Now several manufacturers have come up with amplifiers and extra speakers.

Ear, wot's all this

So, enter the new ZyFi offerings. At 90*125*250 mms, they seem just the ticket for anyone who takes their sound seriously. The smart, midi-sized, trendy black boxes hold three drivers mounted in a bass reflex arrangement.

The main lead taken from the Amiga to the combined amplifier/left speaker is under a metre long: not enough for wall mounting. Similarly, the lead from the left to right-hand speakers is 900mms long and very thin. It is not meant to take more than a few hundred mAmps at best.

A quick check on the PSU ratings confirmed this. The maximum rated output is 9 volts @ 800mA – or 7.2 watts – by the time that reaches the speakers I'll be surprised if it's one third of that. It does take batteries too, which might improve things, but that is an expensive and short-term option.

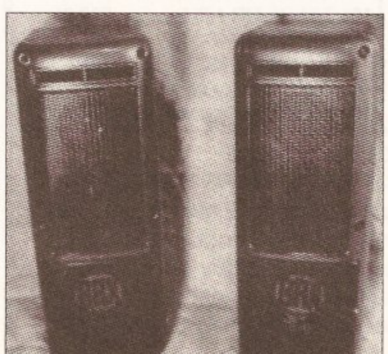
Inside, the design is crude and cheap – barely enough to work.

But what do they sound like? Perhaps the ZyFi sounds better than the design suggests ... well, no. There is no bass to speak of, the mid-range is nothing to write home about and the upper reaches are tinny. Power? Don't expect your teeth to rattle.

The ZyFi is a good looking attempt to improve the Amiga's sound. It looks excellent, but where sound is concerned it is less than average. Even if the output was increased to10 watts per channel I doubt it would sound much better. If stereo is your thing, there are several other units around that are worth inspecting. **AS**

SHOPPING LIST

ZyFi Stereo Speakers.... ......£39.95
distributed by **Zydec**
☎ 0386 45999
available from most major distributors



They look good, smell good and, by golly, they sound naff. Oh well.

CHECKOUT

ZyFi

Style 18/20
Look very high-tec.

Sound 6/20
Reasonable mid-range and top end, but little bass despite the bass-reflex design.

Power 2/20
Not so you would notice.

Design & build 15/20
Sturdy construction, but poor design.

Value 5/20
Look great, sound dreadful but at least they give away a PSU.

AMIGA SHOPPER 46/100

In principle, a great idea but rather poorly carried out.

BEGINNERS START HERE

In this month's *Cracking the Shell* I have made several references to command 'templates', so it is time to explain what these are. Templates are used to break down what you enter into manageable chunks. Think of them as filters, in which each 'argument' or option only fits one part of the template. Most commands can be forced to give their templates by entering the command followed by a query. Try this:

```
1>LIST ?
```

Returning to the adventure game analogy, consider this command:

```
INVENTORY
```

This is a standard command found in many adventure games, usually abbreviated to INV, which lists the objects held by the player. This is similar to DIR (directory) in AmigaDOS which lists the contents of the current directory. Now consider the verb ATTACK, which must have an object to work with – in AmigaDOS, a required argument. Take this for instance:

```
ATTACK DWARF
```

We are giving a command to attack something. ATTACK is the command (verb) and DWARF is the argument (noun). Many games allow you to specify which object to use. In this case you could supply an optional noun such as:

```
ATTACK DWARF WITH SWORD
```

In AmigaDOS, command arguments given in this way are called keywords. The command remains the

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Cracking the Shell

Mark Smiddy gives a neat and tidy account of disk housekeeping with AmigaDOS and reveals how such terribly organised behaviour relates to Workbench



"AmigaDOS is looked upon with trepidation by some, so I'll show you the quickest and best ways to find your way around the Amiga's operating system."
Mark Smiddy

Disk housekeeping on any computer is one of the most important and time consuming tasks of all. It tends to be tedious in the extreme, yet still has to be done from time to time. Sometimes, when a disk starts showing signs of wear, you simply do not get a lot of choice.

As with most things, there is a right and a wrong way to go about it, so here's some advice on how to get speedy and organised results from your housekeeping (sounds like an ad for a vacuum cleaner).

So, first things first, before you can start writing data to a disk, it must be formatted (initialised). You can do this quite easily from Workbench using the Initialise command, but the Shell allows access to several more options.

Correct format

Format in version1.3 has the following synopsis:

```
FORMAT DRIVE <drive> NAME
<name> [NOICONS] [QUICK]
[FFS|NOFFFS]
```

A typical command line, just to get things started, looks like this:

```
1>FORMAT DRIVE df0: NAME
MyDisk
```

And the computer would then respond with:

```
'Insert disk to be
initialised in drive df0: and
press RETURN'
```

It can readily be seen that this is a rather long-winded way of going about things, especially since it is necessary to type DRIVE <drivename> and NAME <diskname>. However, it does avoid you having to rename the disk afterwards as you would have to do in Workbench.

Because FORMAT is not connected to Workbench, it is easy to accidentally format a disk that is currently in use by another process (application) – be sure to watch out for this as it can be pretty damn annoying when it happens.

The other options – usually called switches – will be new if you have previously only ever formatted disks from Workbench. It's a simple procedure to use a switch, as all you need to do is add its name to the end of the command line:

```
1>FORMAT DRIVE df0: NAME
MyDisk NOICONS QUICK
```

Here's a quick rundown of what the various switches do:

● **NOICONS**: This tends to be slightly confusing because it gives the impression that the disk will be iconless. In fact, this option speeds up the formatting process slightly by not creating a Trashcan directory and by copying the trashcan dot-info file from the Workbench disk.

● **QUICK**: This option is a fast way of cleaning an old disk. It just formats and initialises the boot track (track zero) and the root directory (track 39). Formatting, for those of you not in the know, is the process of laying down the timing marks and sectors; initialising is the process of placing AmigaDOS specific information.

The QUICK switch is only meant for disks that have been previously formatted. If your disk is unfortunate enough to have come down with a really nasty case of read/write errors, then, of course, it must be completely reformatted.

● **FFS**: This forces FORMAT to prepare a disk for use with Fast Filing System. FFS is not available for floppies prior to AmigaDOS 2 and will cause the machine to crash. It can be used for hard disks, but most installation software supplied with hard disks will do this for you.

● **NOFFS**: This is, in fact, a bug. FORMAT defaults to formatting with OFS (Old Filing System) anyway. This option was removed in AmigaDOS 1.3.2 – the version that is now being shipped out with most new machines.

Users lucky enough to have Workbench 2 may have noticed QUICK and FFS are available directly from Workbench.

The other main "complete disk" function available from the Shell is not strictly for housekeeping, but it is

continued on page 80

BLITS & BOBS

DISKCOPY can format a blank disk during the copy operation for you – this happens automatically.

TIP OF THE MONTH

Here's a quickie for those who despise the long winded format of the FORMAT command. Called QF – Quick Format – it takes a single parameter and formats a disk called Empty. The trashcan can be suppressed by adding NOICONS.

```
ALIAS QF FORMAT DRIVE []
NAME Empty

Usage: QF <drive>
[NOICONS] [FFS] [QUICK]
```

continued from page 79

very useful to know. DISKCOPY is used to copy an entire disk. Like FORMAT, this function is also used by Workbench – Duplicate to be more precise. (Have a go at opening the info box for a Workbench disk icon and you will be able to see that SYS:System/Diskcopy is actually the default tool.)

The power of the shell becomes apparent once more. DISKCOPY has the following synopsis:

```
DISKCOPY [FROM] <drive>: TO
<drive>: [NAME]
```

The words in brackets [] are optional, therefore a typical dual drive copy might look like this:

```
1>DISKCOPY df0: TO df1:
```

the same follows if you only have a single drive:

```
1>DISKCOPY df0: TO df0:
```

The command prompts you to insert the source and destination disks before starting in either case. This feature can be overridden, but such potentially dangerous techniques can wait until you are much better acquainted with the system.

You may also note that DISKCOPY only takes drive names as parameters – volume names (Extras1.3:, MyDisk:) will not work. Also, it is not possible to duplicate disks of different types or sizes. For instance, see what happens if you try to execute the following line:

```
1>DISKCOPY RAM: TO DF0:
```

Un oeuf's enough

But enough of all that stuff. Most of it can be attempted from Workbench anyway, but from the Shell you can name the destination disk. Workbench normally does this by naming a disk 'Copy of XXXXX' which is actually rather irritating. When used from the Shell, DISKCOPY copies the old name on the new disk.

Even so, although both disks appear identical, the use of AmigaDOS ensures that they are unique. (This may seem irrelevant – but if you have a legal DOS copier like TurboBackup, make a copy of a Workbench disk and try mounting both disks at once ...)

If you want to give a disk a different name after copying it, here's how. The NAME option is a keyword and takes the name of the destination disk as a parameter. This example copies the disk in drive zero onto the disk in drive one; and names the destination disk 'Work'.

```
1>DISKCOPY df0: TO df1: NAME
Work
```

BLITS & BOBS

DISKDOCTOR is a much misunderstood rescue program that can even restore a partially formatted disk.

Before we move on, it's time for a quick word or several about AmigaDOS naming conventions.

For historical reasons, Workbench and AmigaDOS both support spaces in object names – that is: disk (volume), file or directory names. This is generally OK at Workbench level, but when it comes to AmigaDOS, spaces are an absolute nightmare. This is because AmigaDOS uses spaces to delimit command arguments. That is to say, every argument must be separated from the command and other arguments by at least one space. Imagine you have a disk called 'Copy of Workbench1.3'. Now to obtain a directory of that disk (by volume name) you might type the following line:

```
1>DIR Copy of Workbench1.3:
```

to which AmigaDOS responds with: 'bad arguments'.

DIR has assumed the disk is called 'Copy' and taken the rest of the line as other switches. Since these switches are not present, it complains. The correct version is:

```
1>DIR "Copy of Workbench1.3:"
```

This line will work because the volume name is enclosed in quotes and the spaces are taken as part of the name.

Workbench allows spaces in filenames because it does not have to interpret instructions in the same way. In either case, make sure you avoid spaces whenever possible.

In version 1.3.2 the following options were added:

- **MULTI**: This switch tells AmigaDOS to make more than one copy of the source disk. If a bug appears, it can cause this feature to fail.

- **NOVERIFY**: This switches off verification of any unformatted destination disks. It speeds up the process slightly, but is not recommended because the integrity of the data might be at risk.

- The FORMAT and DISKCOPY commands do not belong to AmigaDOS – they live in the System directory. Mind you, for most purposes this will not matter.

It's OK, I'm a doctor

Almost every old-timer will have experienced those heart-stopping messages: 'Error validating disk' and 'Disk structure corrupt, use DISKDOCTOR to correct it' at some time. Quite a lot has been said against DISKDOCTOR, but it does a

same, but we add a keyword modifier WITH and its argument, SWORD. As a final modifier, let's specify exactly how we want to kill the dwarf:

```
ATTACK DWARF VICIOUSLY
WITH SWORD
```

VICIOUSLY acts like a switch – it tells ATTACK to act in a certain way. If ATTACK was written with an AmigaDOS command template it would be:

```
ATTACK ?
NAME/a,WITH/k,VICIOUSLY/s:
```

It is broken down thus:
NAME/a: Object or creature the command will act on (required).
WITH/k: Object used for the operation (optional).
VICIOUSLY/s: How the attack is to be carried out (optional).

Notice how the switch (VICIOUSLY) can appear at any point after the command – the position is not important. Now let's re-write the line:

```
ATTACK DWARF VICIOUSLY
SWORD
```

This does not make any sense because the preposition WITH is missing. The parser doesn't know what was used to hit the dwarf. Applying this to AmigaDOS is simple. Call up the command template for DIR like this:

```
1>DIR ?
NAME,OPT/K,ALL/S,DIRS/S,I
NTER/S,FILES/S:
```

DIR has six possible arguments in version 1.3, though none are needed to get going. They are:

- **NAME: The name of the directory, path, device or assignment that DIR will search. If NAME isn't given, DIR will default to**

SMIDDY'S RED HOT TIP

Here's a little tip for beginners and experts alike who cannot remember how each command behaves. It uses LIST to create a special alias for all commands so they always present their command line templates:

```
1>LIST >RAM:HELPME C:#? LFORMAT ";%S*nALIAS
%S %S%S ?"
1>EXECUTE RAM:HELPME
```

The first line creates a script file in RAM: called 'helpme' formatted like this for every file in the C: assignment:

```
;<Path>
ALIAS <command> <path and command> ?
```

For instance if C: contained just CD and DIR, 'helpme' would look like this:

```
;Workbench1.3:C
ALIAS DIR Workbench1.3:C/DIR ?
;Workbench1.3:C
ALIAS CD Workbench1.3:C/CD ?
```

although, in real terms, the list will be much longer – two lines for every command in C:. When this file is executed, it is no longer necessary (or possible) to supply arguments to each command. Instead you just give the command without parameters and it presents the list of parameters it requires:

```
1>DIR
NAME,OPT/K,ALL/S,DIRS/S,INTER/S,FILES/S:
```

All you have to do is enter the parameters as usual and press Return to activate the command. This is useful if you only have a single disk drive because transient commands are pre-loaded so, you can swap disks without having the hassle of getting the wrong directory etc.

searching the current directory.
- OPT/K: Keyword retained for compatibility with 1.2 version. Takes character argument: A, D, I, AI.
- DIRS/S: Forces DIR to list directories only. (Equal to OPT D.) Mutually exclusive to FILES/S
- ALL/S: Search down through the hierarchy from the current directory and all its sub-directories. (Equivalent to OPT A.)
- INTER/S: Enter interactive mode. Leave it for now, I'll cover it soon. (Equivalent to OPT I.)
- FILES/S: List files only – this option is mutually exclusive to DIRS/S.

Try these command lines:

```
1>DIR
1>DIR OPT A
1>DIR ALL
1>DIR DIRS
1>DIR FILES
1>DIR DF0: FILES ALL
1>DIR Extras1.3: FILES ALL
```

Summary

/a: Required argument. Something must be supplied in this position for the command to work.
/k: Keyword. Optional arguments, which take arguments themselves – usually filenames.
/s: Switch. Optional argument telling command to act a certain way.
The following only appear in AmigaDOS 2:
/n: Numeric. The parameter needs a numeric argument.
/m: Multiple. One or more parameters can be specified, up to the max length of the command line. Replaces the ",,,,,," construct in older versions.
/f: Final. This argument MUST be the last one on the command line – everything present on the line is read up to the carriage return.

reasonable job at salvaging disks.

The best way to see DISKDOCTOR in operation is simply to try it out for yourself. For this example it would be very wise to make another copy of your Workbench disk. Now have a go at formatting the copy using the following command:

```
1>FORMAT DRIVE df0: NAME
Blast QUICK
```

However, don't forget to specify the QUICK switch or the example just will not work.

And now you're ready to start DISKDOCTOR. It only takes one parameter – that is the name of the drive you want it to work on:

```
1>DISKDOCTOR df0:
```

As you watch, DISKDOCTOR will reconstruct most of the disk before your very eyes. This does take a while, but it is surprising how much information can be retrieved.

It is all thanks to the way AmigaDOS arranges information on the disk, so at least something good came out of it.

DISKDOCTOR is not capable of retrieving data that has been lost in bad areas of the disk – these show up as HARD ERROR @ Track X Surface Y. If DISKDOCTOR encounters a file belonging to a directory that has been lost, that file is placed in the root directory. Nevertheless, unless the disk is very badly damaged, it is usually possible to reformat and re-use it.

The command can present you with over 25 errors and messages so there is not nearly enough room for them here. If enough people write in, then I'll run them as a series complete with explanations. AS

BLITS & BOBS

With AmigaDOS you can copy files to almost anywhere – that includes the screen, printer or even the speech system.

AmigaDOS MASTER CLASS

This is where you propellerheads can get stuck in to some nasty little problems. Since these are intended for experts, I will keep explanations to a minimum. This potboiler started life on CIX late one evening – someone wanted COPY to act like a PC. That is: if a source directory is not specified, COPY duplicates the file in the current directory, ie:

```
1>CD RAM:
1>COPY S:SPAT
```

This is not possible because COPY requires two arguments.

Either argument can be replaced with "", but this is messy. The solution therefore is to use an alias. I've called this one CCOPY – Current Copy; the name is not important. It is defined as follows:

```
ALIAS CCOPY COPY [] ""
```

Add this to your Shell-startup script so it will be available at any time; all the normal COPY options are available too. Usage: CCOPY <file> [options].

This is all very well, but you have to remember which version of COPY to use depending on the situation. To get around this, it is necessary to write a small script to make COPY intelligent. If a destination is supplied it works like AmigaDOS; if not it behaves like MS-DOS. The script is defined thus:

```
.key
FROM/A,TO,ALL/s,QUIET/s,BUF/K,
CLONE/s,DATES/s,NOPRO/s,COM/s
.bra {
.ket }
.def BUF 200
.def TO NOTHING

IF {TO} EQ "NOTHING"

ECHO "Copying from: {FROM} TO
" NOLINE
CD
COPY {FROM} "" {ALL/s}
{QUIET/s} {CLONE/s} {DATES/s}
{NOPRO/s} {COM/s} BUF={BUF}

ELSE

ECHO "Copying from: {FROM} TO
{TO}"
COPY {FROM} {TO} {ALL/s}
{QUIET/s} {CLONE/s} {DATES/s}
{NOPRO/s} {COM/s} BUF={BUF}

ENDIF
```

This script mirrors the original COPY command very closely although a few embellishments have been added – displaying the source and destination directories for instance. Also, the destination is no longer a required argument. To use this, simply type it into your favourite editor and save it in S:. Now set the "S" protection flag and it works like the real thing. It relies on an undocumented feature of AmigaDOS 1.3 in that switch (/s) arguments are supported. This may not apply in AmigaDOS 2 or ARP.

Most scripts, and this is no exception, work best from hard disks or when the script commands – IF, ELSE, ENDIF, ECHO and EXECUTE are resident.

JARGON BUSTING

AMIGADOS 1.2: Now generally out of date, but still used occasionally.

AMIGADOS 1.3: The most common revision of AmigaDOS in general use.

AMIGADOS 1.3.2: Slightly updated, enhanced and partially debugged version of 1.3.

AMIGADOS 2: The latest and greatest version so far. Only available for the Amiga 3000 series at present.

ARP: AmigaDOS Replacement Project. The MicroSmith's version of AmigaDOS – thought by many to be better than AmigaDOS, and certainly more friendly in many respects.

FFS: Fast Filing System. Improved version of the file structure which is faster, although slightly more prone to errors.

OFS: Old Filing System.

SCRIPT: Meta-AmigaDOS command built from other AmigaDOS commands. More usually referred to as a batch file on other systems.

WHITE SPACE: Any printing character which does not display something on the screen. A space is a typical example.

Got a Problem John?

If you are completely bogged down with any aspect of AmigaDOS whatsoever, drop me a line detailing the nature of your conundrum. Send it to: Mark Smiddy, *Amiga Shopper*, 30 Monmouth St, Bath BA1 2BW. I'll do my level best to lose it on my desk – er, figure out an answer that is.

Sorry but no personal correspondence can be entered into, no matter how huge the bribe with which you may try to tempt me. Well, within reason. Desperate persons, with no regard for telephone bills, can EMail me on CIX "SMIDOID" or find me lurking in the *Amiga Shopper* conference.

Child's play

"As the mother of two lively kids I have tested out software in the toughest manner – on the children themselves."
Pat Winstanley

Pat Winstanley delves in to the untapped wealth of Amiga educational software currently available for the little ones

This month I will be taking a look at Amiga software available for the under eights. In case you missed issue one I will repeat the point that age categories should not be taken too rigidly. My six and eight-year-olds still have a great deal of fun with software intended for toddlers as well as the more advanced packages aimed at top juniors.

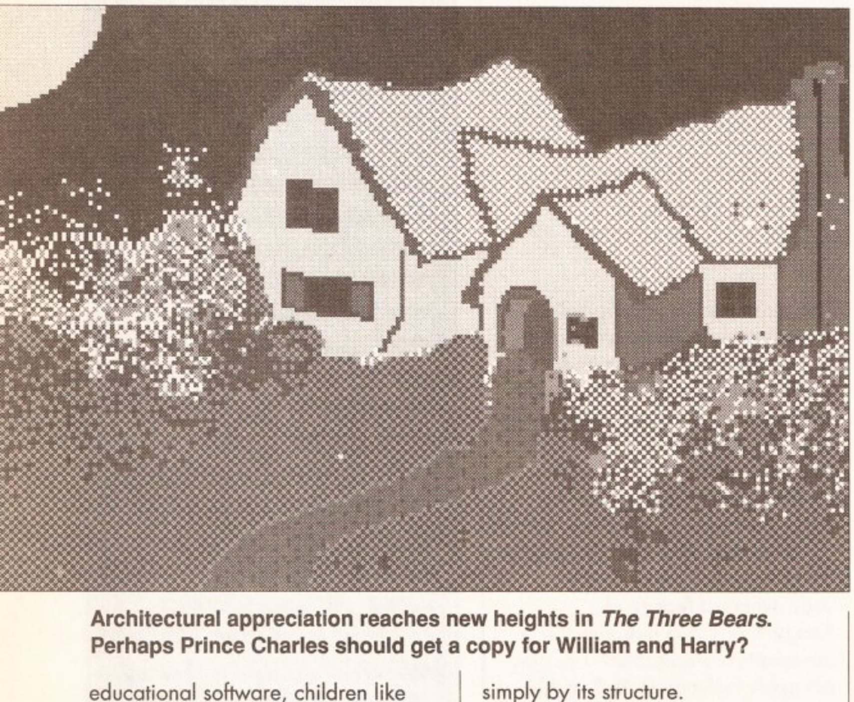
Despite the apparent dearth of educational software around, there is in fact a wide range available – if you know where to look. The following packages include the best I have seen; in particular those the young testers have had to be bodily yanked away from. Many of them also have me pleading "Isn't it my turn yet?", since that's the only way I can play with my beloved machine when they are home from school – like the recent two weeks of holiday.

READING

Learn To Read With Prof

Intended to take non-readers from first steps to a reading/comprehension age of around early junior, this set of four packages is something of an enigma.

Perhaps my local testers are becoming a little blasé, but none of them were 'grabbed' by the packages to the extent of asking for them again. While a solid reading scheme, the presentation smacks of 'school' and forgets that when using



Architectural appreciation reaches new heights in *The Three Bears*. Perhaps Prince Charles should get a copy for William and Harry?

educational software, children like some spice to reward their efforts.

However, the series has been very successful in schools – presumably with non-computer-literate children and those who are put off by the pen and paper approach.

I hesitate to mention the name, but suggesting to the local school that copies are purchased for the Archimedes would probably be an excellent (and wiser) step than spending out for home Amiga versions. If you do want copies for the home, the most suitable children are those with little computer experience and reading difficulties.

The Three Bears

The adventure format is surprisingly under used for children's software which is a shame as it offers reading, spelling and understanding topics simply by its structure.

The Three Bears is a very simple adventure based on the fairy tale of the same name and sets the child the task of rescuing baby bear who has been spirited away by the evil witch.

Using a very simple on-screen map the child wanders around the playing area, meeting wolves, wizards and other assorted nasties. Most inputs required are restricted to one or two letters in response to an either/or question. In addition some spelling questions are asked. For example "What letters are missing from this word (_ppl_)?"

A nice touch is that answering 'No' when the child is asked to help elicits responses from the program such as 'Don't be unkind.' and then takes the child on to the next step anyway. This raised several smiles among the testers.

Donald's Alphabet Case

For children just beginning to recognise different letters, this is a worthwhile offering. Based on the Disney character and using cartoon-standard graphics, the game has the child watching out for all the disguised letters that have invaded Donald's house.

As a letter appears on the screen Donald tries to catch it, but only if the relevant key is pressed to alert him to its presence will he be able to find it. If no action is taken (or the wrong key is pressed) Donald continues to wander around the room searching away while the letter uses its camouflage to hide and performs cheeky actions such as sticking its tongue out behind his back.

Intended for pre-school children, my own older brood found this game delightful and they enjoyed working their way through the alphabet to see what sort of comical situation would appear next.

The one reservation I have is that all of the letters are upper case, which could be extremely confusing for a beginner-reader struggling to come to terms with the upper and lower case alphabet.

'RITING

Let's Spell

Aimed at the younger child, *Let's Spell* gives a good grounding for those learning letter sounds for the first time. Two versions are available, each taking a familiar area and the objects found there. The idea is that clicking on an object in the main picture brings that object up on an alphabet screen.

The aim of the game is for the child to spell the name of the object by clicking on the correct letters. As a letter is selected, the sound of the letter is spoken using clear sampled speech. Since the letters are enunciated as 'ah', 'buh', 'cuh' and so on, the child is helped in the difficult task of stringing sounds together to make words as well as that of linking sounds to letter shapes.

The two areas are 'At home' and 'At the shops', and versions are also available in French. Nicely self-contained, very little parental help is needed – in fact adults are advised to retire to another room to avoid the sampled speech as soon as possible.

Things To Do With Words

Having picked up the basics of reading, the child's next step is to master spelling and this is where *TTDWW* comes in. The package is split into three games – anagrams, jumbled sentences and word hunt.

Anagrams simply presents a jumbled word on screen and asks the child to type in the un-jumbled form. Jumbled sentences does the same with words rather than letters. Word hunt is rather different, involving finding words made up of some or all of the letters of another word.

I found that children needed a good deal of help with this package – not the fault of the programs but simply the inherent difficulty of the games. With word hunt in particular, playing became a family effort; the children finding simpler and more obvious words with the adults searching out more obscure spellings.

Aimed at school age children, this package is great for reinforcing spelling and word building skills.

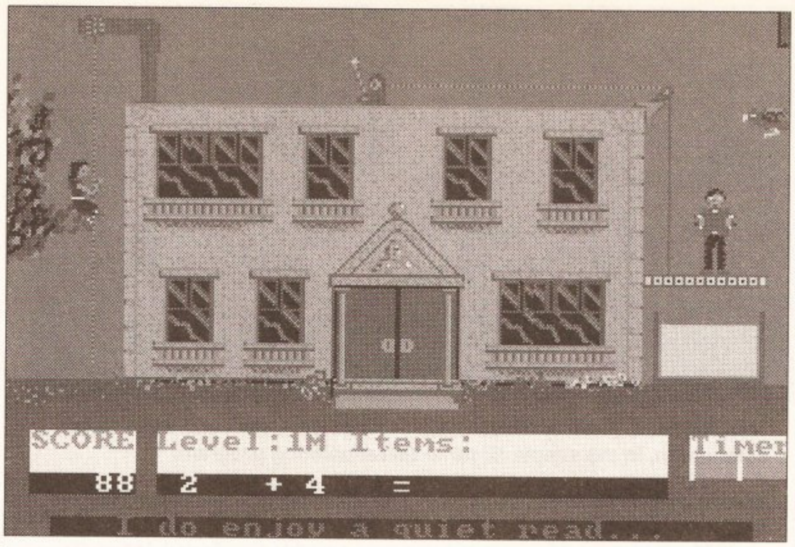
Kidstype

Having cracked spelling (or at least when the child is confident enough to string letters together in a rough approximation of a word) it is time to encourage composition. Regardless of spelling accuracy, most children love to write their own stories and *Kidstype* is an excellent vehicle to help get them started.

Based around a simple word processing program, *Kidstype* combines typing with pattern design. Around the screen are various icons on which the child can click to select.

The complete alphabet is available, each letter embedded in a picture of an object beginning with that letter. When selected, the whole letter-picture appears at the cursor point. Alternatively, letters can be typed from the keyboard, in which case they appear in large, lower case letters on screen. The two styles can be mixed at will giving very interesting effects .

Also included is a game in which the child chooses a picture letter then tries to spell the object pictured. The words and pictures supplied with *Kidstype* may be modified simply by accessing the lists on disc, which serves to make this an entertaining and versatile package.



Henrietta bravely climbs a rope, with help from accurate addition by the child, in order to prevent a ducking in custard in *Hooray for Henrietta*.

'RITHMETIC

Mickey's Runaway Zoo

Another game aimed at toddlers and based on Disney characters, the plot involves recapturing all the animals. For each species, a different number of escapees must be found by selecting the correct number on the keyboard to match that shown on screen. Once the number is typed, that quantity of animals march one-by-one to the collecting cage, thus setting the context of the magnitude of different numbers.

As with the other Disney games, there is very little for the child to actually do but an awful lot of delightful animation to watch. Although parental help is not required for most children, the greatest benefit will come from sitting with the child, counting aloud and talking about what the child can see.

While smaller children will need some help with this game, those beginning to recognise written numbers will manage the keypad on their own. Or the child could be encouraged to shout a number for Mum to press on the keyboard.

STICKY LABELS

Young children begin learning the alphabet using lower case letters, progressing to upper case in the later infant school stage. Because of this, the keyboard with its upper case letters can be pretty confusing and can often get in the child's way when something needs to be typed in.

To get around the problem, simply cut some self-adhesive labels into small squares, write a lower case letter on each, then stick the pieces over the corresponding keys. Unless you are a touch-typist, you'll find this pretty weird but it really does help the children.

Eventually the letters wear out and the children grow up. Then it's the work of a moment to remove the sticky bits and restore your precious keyboard to its original state.

Game Set And Match

Along with numbers, children spend a much early learning time matching shapes and colours. This package consists of a variety of matching tasks ranging through simple colours or shapes to numbers and coins.

The format is similar for each game. Along the top is a range of possible colours, shapes or numbers while a box below contains the match. A highlight square moves along the choice range and the child must stop the square on the correct choice. Alternatively the top row can contain a sequence of shapes with the lower box displaying a changing range one-by-one for the child to stop when a match is made.

Tucked in as extras are a reaction timer and a higher/lower game. The latter is not guesswork like the TV game, but a comparison task – is the last number shown higher or lower than the previous one?

Given that this pack is aimed at young children, I feel too much emphasis has been put on program reaction rather than the child driving the the game. My six year old became frustrated with the package as even on the lowest speed, by the time he had decided on an answer, the game had moved past him.

Magic Maths

For the infant school child, coming to grips with addition and subtraction *Magic Maths* offers a range of five activities designed to practise and reinforce lots of new skills.

Each of the activities is presented in a simple manner. Thus 'Driver' shows a picture of a school bus and a sum. each time the sum is answered correctly, a child appears inside the bus, which then drives off to a new screen. Once the bus is full the computer congratulates the child with speech and a flashing screen. Other tasks include the use of scales where the child counts the objects weighing down one side of the scale then supplies the appropriate number to balance them. Alternatively, a sum can be the weight, the answer to be calculated for balance.

The beauty of this package is that animation and speech are used in a non-distracting yet satisfying way so that the child can concentrate on the 'work' while enjoying the computing environment at the same time as an unobtrusive background.

Hooray For Henrietta

Taking animation a little further, this game uses arithmetic questions as obstacles to progress. The plot involves Henrietta rescuing her appaling prospective bridegroom and rescuing his wedding clothes. For each of the four disciplines Henrietta is presented with a task to perform. Thus the addition section sees her climbing a rope (against the clock) to reach a lever. Once pulled the lever allows Henry to escape a ducking in custard.

Although reactions are needed to avoid the count-down, a generous time limit is given so the child is not too rushed. The main drawback of the game is simply the game aspect. Since failure sees Henry drenched in custard the child is sorely tempted to deliberately give wrong answers. Scetlander presents its range as games with an educational content rather than educational software, and Hooray for Henrietta is certainly the former. For children who shy away from the more formal presentation this is a good compromise between fun and work.

LUCKY DIP

Fun School 3 (under 5)

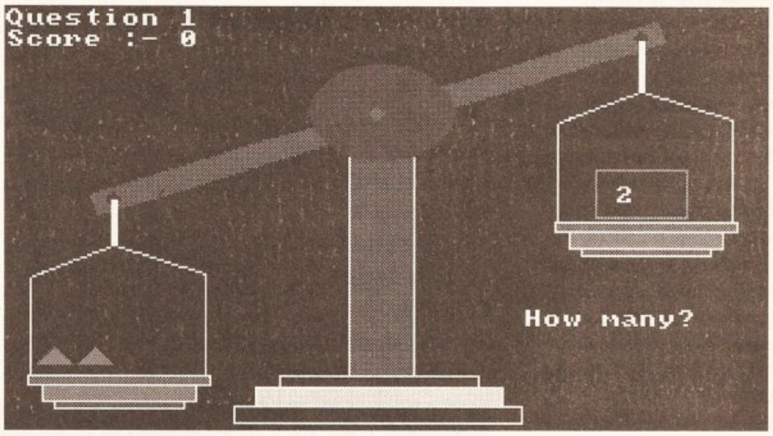
Database certainly picked a winner when it developed the *Fun School* range of games. Now in its third incarnation covering three different age ranges each time, the series has become the yardstick (should that be metre-stick these days?) by which all other education software for popular machines is measured.

The pack contains six different games, all simply but beautifully animated with sparse but apt sound effects. Presentation is outstanding, with a simple visual menu system which even the youngest child can master without help from an adult after an initial introduction.

The games cover counting objects, matching letters, matching shapes and colours, matching words to pictures, matching words to actions and painting luridly coloured farmyard scenes. In each case, skill levels can be adjusted by the child/parent or automatically handled by the computer.

Tots rapidly become hooked by

continued on page 84



***Magic Maths* uses a set of scales to make some addition problems, whereby the child has to work out how to make them balance.**

continued from page 83

the package (and so does a certain twelve year old of my acquaintance together with a variety of quite fascinated adults).

Fun School 3 (5 – 7)

As with the under 5's pack, this disk too offers the same high standard of presentation and ease of use, only the activities changing to reflect the higher age group.

In this selection are: a shop in which the child practices pocket money economy, a simple time tutor, a retrieval-only database with fascinating subjects such as dinosaurs; a frog who does anagram sums; a route finder in Logo style; and an opportunity for the child to learn about electrical circuits.

The fascination of this pack is just as great as the younger version, with all ages keen for 'just one more go'. Both packs are highly recommended.

Puzzle Book

Whereas the Fun School series offers a range of games with fairly obvious application to the three 'R's, the Puzzle book range presents tasks with rather more obscure topics.

As the title implies, the range is more along the lines of logic problems than straight arithmetic/spelling and in this respect it works very well indeed.

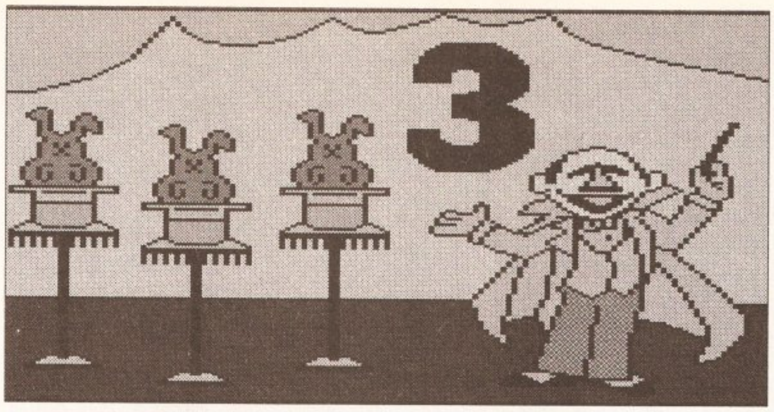
The disk contains six games covering *Dungeon Master*-style mazes, clock patience, a modern version of the classic game of *Nim*, a word hunt (use the letters of a word to make as many new ones as you can), a reaction timer on the lines of *Snap*, and *Magic Squares* in which a grid must be filled with numbers to make row, column and diagonal totals equal.

Starting age for the pack would be about late infant school level, but there is plenty of challenge for adults too. An excellent choice for the whole family.

Sesame Street

For the youngest children who are not yet ready for formal education, but want to join in on the computer, have a look at the Electric Crayon range.

Taking characters from popular children's shows such as *Sesame Street* and those dreaded turtles, the packs each consist of around thirty screens of line drawings for the child to colour. For instance, *Letters for You* has a screen for each letter of the alphabet with a picture of one of the



"Ah, ha, haaa, three rabbits in hats" counts the Count and waits to be coloured in, in the simple *Sesame Street* painting program.

Sesame Street characters and the letter that needs colouring in.

With simple icon-driven controls and the ability to rub out mistakes, children will be absorbed for hours. These packs are a simple, fun way for small children to learn mouse control and familiarise themselves with the computer.

Play It Safe

Education is also about learning how to survive safely in the everyday world. And it's not only children who need educating about safety – most accidents to small children take place in the home where parents have carelessly left things lying around.

This game aims to educate children about the hazards to be found in their everyday environment and does so extremely well. The plot is that loads of nasty creatures have invaded your house and left dangerous situations all around. By controlling a teddy, you must enter each room and identify the hazards. Each room has a random selection of hazards and, when one is found, a jigsaw piece of the monster responsible is collected. When the jigsaw is complete the, room is safe.

This game is well presented and the best and most original offering I have seen for some time. Considering that it is Licenseware and costs only £3.50 it's a must for any child.

Pick A Puzzle

By the same author as *Play it Safe*, but PD this time, is a jigsaw generator with a selection of puzzles and several levels of difficulty.

At its simplest level a picture stored on the game disk is cut into pieces which can be selected and placed by mouse clicks. Go up the levels and you'll be presented with flipped and rotated pieces – with no jigsaw grid lines as guides.

The pictures are perhaps a little hard, but with some thought it should be possible to create your own pictures using a paint package for incorporation in the game. AS

Checkout

Software	Education value	Ease of use	Flexibility factor	Addiction	Overall
Learn To Read	25	18	8	10	61
Three Bears	15	20	5	15	55
Donald's Alphabet	15	20	2	25	62
Let's Spell	25	25	5	20	75
Things To Do	25	20	5	15	65
Kidstype	25	25	5	20	75
Mickey's Zoo	15	20	2	25	62
Game Set & Match	20	15	5	15	55
Magic Maths	25	20	5	15	65
Fun School 3	25	25	8	25	83
Puzzle Book 1	20	25	8	20	73
Sesame Street	15	20	5	25	65
Play It Safe	25	20	5	25	75
Pick A Puzzle	15	20	5	25	65
Hooray For Henrietta	20	20	5	20	65

AMIGA SHOPPER — And those of you with less than 50/100 can see me after class.

Shopping List

Sesame Street ....£15.95 each
by Merit Software,
13635 Gamma Road,
Dallas, Texas 75244, USA
☎ 0101 214 385 2353

Funschool ....£24.99 each
Database Direct
Freepost, Ellesmere Port,
South Wirral, L65 3EB
☎ 051 357 1275

Hooray For Henrietta £24.99
Sketlander Software
74 Victoria Crescent Road
Glasgow, G12 8BR
☎041-357 1659

Donald's Alphabet Case.......£24.99
Mickey's Runaway Zoo.......£24.99
by Walt Disney Computer Software
500, 5th Buena Vista St,
Burbank, California 91521
☎ 0101 818 567 5360
Distributed in UK by
Entertainments International
4 The Stannets,
Laindon North Trade Centre,
Basildon, Essex, SS15 6DJ
☎ 0268 541212

Learn To Read With Prof £24.99
Prisma Software
29 St James Ave
Upton Heath, Chester
Cheshire, CH2 1NB
☎ 0244 326244

Let's Spell £19.95
Things To Do With Words £19.95
Puzzle Book 1 ....£19.95
by Softstuff
19 Quarry Hill Road,
Tonbridge, Kent, TN9 2RN
☎ 0732 351234

Play It Safe £3.50
Pick A Puzzle £2.50
AMOS PD Library , 25 Park Road
Wigan, Lancs
☎ 0942 495261

Kidstype £25.50
Game Set And Match..........£20.39
by Genisoft
Unit 3, Poyle 14,
Newlands Drive,
Colnbrook, Berks, SL3 0DX
☎ 0753 680363

Magic Maths......................£22.95
The Three Bears £22.95
School Software
Tait Business Centre,
Dominic Street,
Limerick, Ireland.
☎ 010 353 61 45399

For all the above, try your local computer software store.And don't forget to **Shop Around!**

Breaking the language barrier

Which is the best programming language for you? Multi-lingual Cliff Ramshaw assembles an exhaustive survey to find out

"Learning how to program can seem a daunting task to the novice. But once a few simple principles are understood, things fall easily into place. Having written a host of commercial programs, I can help you through the language barrier so you and your routines will be up and running in no time."

Cliff Ramshaw



Despite the profusion of languages available, you might be surprised to learn that Amigas 'understand' only one: 68000 machine code. In fact, machine code is all that any computer understands, but the exact dialect depends on the particular central processing unit – that is, the chip in your computer that does the computing and controls all the other chips, hence it being called 'central'.

Machine code is stored as a series of consecutive numbers in the computer's memory. Memory chips, it should be borne in mind, are different from the processor, which fetches information from memory using an address system of numbers – one number per location in memory.

> ***"What is binary? It all goes back to the time of ancient Athens."***

A device called a memory bus handles interactions between the processor and memory. The bus transfers data to and from the memory according to the addresses that the processor specifies.

The processor does have a certain amount of memory inside it, divided up into what are called registers. Some of these registers can be used by a machine code program (there are 16 of these in the 68000), and can be accessed much faster than ordinary memory as the processor doesn't have to use the memory bus. Other registers are private to the processor. An example of this is the Program Counter (PC) register, which holds the memory address of the next instruction to be executed. Eh? Well, when a program is running, a number is read in, or 'fetched', from the area of memory that the PC points to. Then the PC is moved on one, so that it now points to the next instruction in the machine code, and the number already fetched is executed as an instruction by the central processor. This done, the processor fetches the new instruction pointed to by the PC, and the whole thing is repeated.

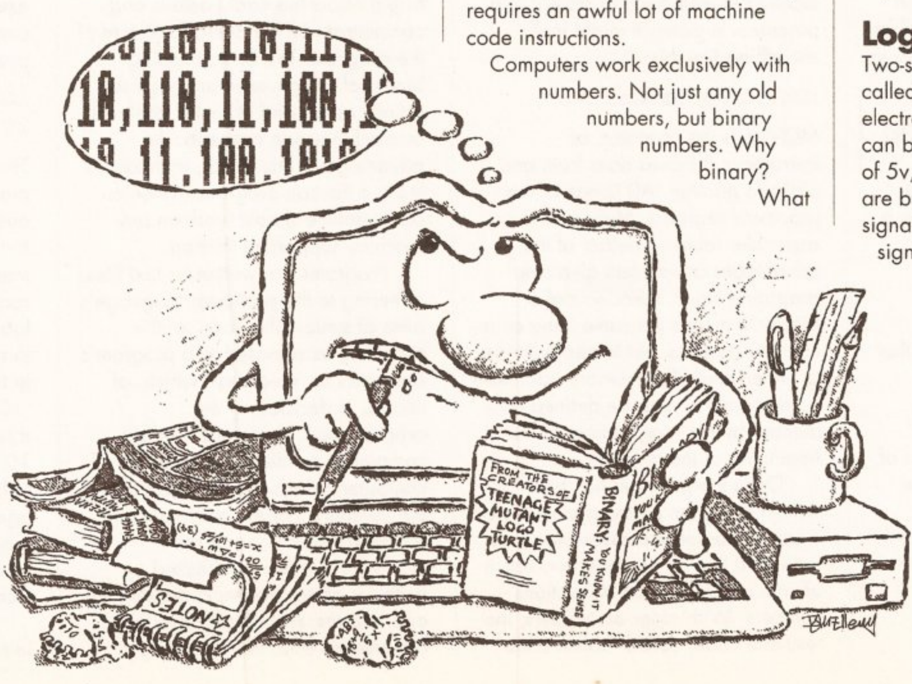
Balancing registers

These instructions are typically very simple, perhaps adding the contents of two registers together (and, of course, storing the result in one of the two registers) or putting a particular value held by a register into a specific area of memory.

You can probably see that, as well as holding instructions for the processor to execute, memory is also used to hold the results of calculations arrived at by the instructions. These results are termed 'data'. As far as memory is concerned, there is absolutely no distinction between instructions and data. If the PC should point to an area of memory holding data rather than instructions, the processor would assume that it was dealing with a sequence of instructions and probably come off and hurt itself. Suffice to say, the results would certainly be unpredictable.

And that, basically, is that. Advanced processors, such as the 68000, have quite large instruction sets, including instructions that can carry out such clever things as multiplications and divisions. Even so, it is obvious that machine code works on a very simple level. To create a program of any complexity requires an awful lot of machine code instructions.

Computers work exclusively with numbers. Not just any old numbers, but binary numbers. Why binary? What is binary? It all goes back to the time of ancient Athens. Aristotle developed a system of logic, whereby a statement (termed a 'predicate') can be either true or false. For example, take the statement 'it is raining'. Sometimes it is true, sometimes it is false.



Much later this was developed into an algebra (simply a means of manipulating such statements) by George Boole. Called Boolean Algebra, it supplies a number of simple 'operators' that can be applied to logical predicates, again giving values that are either true or false. If we have two predicates – 'it is raining' : 'I am outside' – then the predicate 'I am getting wet' is true if, and only if, the first *and* the second predicate is true. *'And'* is known as a logical operator.

Logical, Captain

Two-state logic, as it is sometimes called, lends itself particularly well to electronics, where the value 'true' can be represented, say, by a signal of 5v, and 'false' by 0v. Logic circuits are built taking one or two input signals and supplying one output signal. So an AND logic gate will output a signal of 5v if both of its inputs are set to 5v; otherwise it will output 0v. In this way, very complex circuits can be built up, using nothing but the concepts of truth and falsity.

Which is where binary comes in. In maths circles, the number system we normally use is termed 'base 10' or 'denary', because we represent values between zero and nine with a single

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digit. Values over this require two digits, with the left of the two digits representing the number of 10s. This might sound obvious, but it doesn't actually stop there. It is possible to use systems with different number bases. Binary uses base two, meaning that a single digit can represent either a zero or a one. (A binary digit is called a bit.) In the case of a two-digit number, the left-most digit represents the number of twos in the value. For three digits, the left-most represents the number of fours (equivalent to 100s for a denary number), the middle represents the number of twos (equivalent to the 10s) and the right-most is the units – either one or zero. So the binary number 101 is equivalent to the denary number 5.

A direct correspondence can be drawn between two-state logic and binary – a one can be used to represent truth, a zero for falsity. Using a number of simple logic gates (the AND gate, for example), circuits can be built to perform such functions as addition or subtraction. Take this a stage or two further, and you have a central processing unit. For memory, all we need is a circuit that will always output either a 1 or a 0 until an input signal comes along to tell it to change (either to a 0 or a 1). Again, this can be accomplished using a small arrangement of logic gates. Memory is normally organised in groups of eight bits, known collectively as a byte, holding numbers between zero and 255 (the binary number 11111111 – that is, eight ones, or bits – equals the denary number 255).

High numbers

If this is the case, how then can computers handle numbers greater than 255? Well, in the case of the 68000, memory can be viewed in groups of 16 or 32 digits, as well as eight, giving rise to ranges of zero to 65,536 and zero to 4,294,967,296. Even so, what about decimal numbers and words? These are implemented through software. Alphabetical characters, among others, are represented by a code known as ASCII (American Standard Code for Information Interchange), by which each character has a corresponding number (in a range of 0 to 255) that is translated when the text is displayed. Decimal numbers are represented in what is known as floating point format, the specifics of which can vary depending on the system used.

Obviously, writing machine code as a sequence of 1s and 0s would be a real pain. For this reason, numbers are usually written in hexadecimal instead of binary. Hexadecimal is a number system using base 16, where each digit has a value between 0 and 15. To avoid confusion (or possibly to create it, depending on your point of view) digits above nine are represented by the letters A to F. So the hexadecimal number AF is equivalent to the denary number 175.

In the bad old days, people used to enter machine code in hexadecimal form. This is an extremely error-prone business. Nowadays, people use assemblers. With an assembler, instructions are entered in a text file as a series of short words known as operators. Some of these operators are followed by operands – that which the operator operates on. Most operands are memory addresses, ie: a number corresponding to a particular memory location, as distinct from the value (or 'data') actually held in that memory location. A typical instruction might be to take the contents of a location in memory and store it in a processor register. It might look something like this:

```
MOVE.L MyScreen, A0
```

MOVE.L is the operator, or instruction; it moves data from one place to another. A0 is one of the processor registers. MyScreen is an assembler label – another of the advantages assemblers give over programming in hexadecimal or binary. It means the same thing as a memory address, but is easier for us to understand. The memory address it corresponds to must be defined as a number by the programmer at the beginning of the program.

Once the program has been written (using an editor or possibly a word processor) the assembler goes through it line by line and converts it all into machine code instructions – numbers. With older assemblers, the resultant code, called 'object code', is incomplete at this stage – it still has to be 'linked' with any external routines or libraries that it might use. Object code is pretty much the same as machine code, but with certain gaps in it. These gaps occur whenever the compiled program uses parts of another program.

THE NUMBER BASES

Denary	Hexadecimal	Binary
0	0	0
1	1	1
2	2	10
3	3	11
4	4	100
5	5	101
6	6	110
7	7	111
8	8	1000
9	9	1001
10	A	1010
11	B	1011
12	C	1100
13	D	1101
14	E	1110
15	F	1111
16	10	10000

Pick 'n mix

In practice just about every program uses bits from other programs. Even the simplest operation, such as outputting characters to the screen, is done by calling a pre-written routine (a routine being a program, or part of a program, written to perform a specific task). This routine is left out when the user's program is compiled and has to be linked with it afterwards. For this, surprisingly enough, a linker is used.

A linker joins together the various pieces of object code and sorts out all the references they make to each other that had been left as gaps at compilation time. The result is executable machine code.

Even with an assembler, writing machine code can be more hassle than it is worth. Because the instruction set is small, the programmer must string a lot of instructions together to achieve the simplest effects. A really large program can be immensely difficult to write: not only does the programmer have to worry about the intricacies of where data is stored, etc, but he or she must also keep an overall view of the problem in mind. It is not difficult to make errors. Furthermore, if the program is required to run on a machine with a different processor, the whole lot has to be re-written.

Various programming languages have been designed to help alleviate these difficulties. Languages such as Fortran, one of the first 'high-level' languages, allow the programmer to forget about the fiddly details and concentrate on the overall structure of the program. The basic building blocks of a high-level language are usually composed of many low-level or machine-code concepts. An advantage of this is that, in theory at least, a Fortran program written on one machine should work on any machine supporting Fortran.

Programs are written as text files, adhering to the particular language's rules of syntax (the 'form' of the program, as opposed to a program's semantics or 'meaning', which, of course, is decided by the programmer). These text files are completely unintelligible to the computer, which understands nothing but numbers. For this reason, some sort of translation is required.

There are two established methods of translation: compilation and interpretation. Both have their advantages and, not surprisingly, both have their disadvantages.

The simplest of the translation methods to use and understand is probably that of the interpreter. The classic interpreted language is Basic.

An interpreter is a program in itself, a piece of machine code executed by the processor. It works on a program written as a text file and goes through it statement by statement. (A statement is simply an instruction in the language in question, but more powerful than a single machine code instruction.) The interpreter has a set of rules for what makes a valid statement, and checks each statement in turn against these. Assuming the statement is valid, the interpreter will then execute a piece of machine code corresponding to the 'meaning' of that statement. Typically, a single Basic statement is equivalent to a great many lines of machine code.

Interpreted languages usually come with their own editors, so that typing in a program and executing it are straightforward operations. If the programmer wants to make an alteration, this can be done directly to the text and the program can be re-executed there and then. This makes interpreted languages excellent for beginners and for development work where a lot of program tweaking is necessary.

Non comprend parse

Unfortunately, a program written in such a language can only be used with the interpreter; it is meaningless by itself. An interpreter is a large program, since it must be able to deal with all of the possibilities as defined in the language, so a Basic program and a Basic interpreter together make up a large and mostly redundant piece of code.

Furthermore, the program has to be re-translated every time it is executed, which slows it down considerably. For a simple Basic program like:

```
10 PRINT "Hello World"
20 GOTO 10
```

The first line is interpreted and a piece of machine code is executed to output the characters 'Hello World' to the screen. Then the second line is interpreted, and the interpreter realises it has to jump to a line labelled '10'. It then has to search through the program (mercifully short in this case) to find the line labelled '10' and continue from there. By now it has completely forgotten what line 10 meant, so it has to re-interpret it before it can perform the output again. Stopping the program and running it again would mean that the whole lot has to be translated once more. Clearly not an ideal situation.

While on the subject of interpreters, it is probably as well to

mention scripts. Scripts are simply a collection of operating system commands contained in a file. This file is executed by typing EXECUTE filename, where filename is the name of the file containing the script. EXECUTE is itself an operating system command. Such commands are used from the CLI or shell (a text-based method of interacting with the Amiga, as opposed to the graphic interface of the Workbench). Each time a command is typed, the operating system searches through the disk and if it can find a file with that name, it loads it and attempts to execute it. At the simplest level, a script saves typing the same sequence of commands over and over again. Once a script is executed, each of the commands it contains is executed in turn as if they had been typed at the keyboard.

An example script might be:

```
cd sys:mysource/c
dir
```

which would set the current directory to 'sys:mysource/c' and then give a listing of the files located there.

Because AmigaDOS is a relatively sophisticated operating system, more impressive things can be accomplished. AmigaDOS scripts have a limited understanding of the idea of variables (places where values can be remembered and subsequently changed).

Scripts can accept parameters (in much the same way that the command 'cd' in the above example took the parameter 'sys:mysource/c'). They also allow simple control structures to be created, giving the programmer the opportunity to control the flow of execution in a program in a similar manner to that of Basic or C.

However, programs written in AmigaDOS are difficult to read, and because of the limited number of error messages AmigaDOS supplies, they can be murder to debug.

Compile a pile

Compilers, on the other hand, translate a program wholesale. Like interpreters, they work on programs in the form of text files (known as 'source code') but they don't execute them. Instead, like assemblers, they produce object code which then must be linked to create an executable machine code file.

Once a program has been compiled, it stays compiled. It can be run as many times as you like,

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BREAKDOWN OF AN ITERATIVE PROGRAM IN BASIC AND ASSEMBLER

Comments	Basic	Assembler
	`REM Factorials for 1 to 8`	`* now do our factorials`
First define our variables: 'i' and 'j' (or d5 and d6) are the iteration counts, n (d7) is the value of the factorial. In Basic, variables generally don't have to be declared unless you want to specify a particular size and type. In assembler, it's easiest to use the processor registers - if more variables are needed, you have to start allocating memory for them. a5 holds the address of the string where all the results are written before output in the assembler version	`DEFINT i,j` `DEFLNG n`	
Set up the external loop using i as the count. Basic allows this to be done with the 'FOR...NEXT' construct – with assembler it has to be done stage by stage.	`FOR i=1 TO 8`	`moveq #0,d5 'i'`
Set the answer to 1,initially	`n=1`	`nexti moveq #1,d7 'n'`

Set up the internal loop using j as the count.	`FOR j=1 TO i`	`moveq #1,d6 'j'`
		`addq.b #1,d5 increment i`
		`move.b d5,d0 turn i to`
		`addi.b #48,d0 ASCII and put`
		`move.b d0,(a5) in output.`

n becomes equal to its old value multiplied by j	`n=n*j`	`nextj mulu d6,d7 n=n*j`

end the internal loop	`NEXT j`	`cmp.b d5,d6 does i=j`
		`beq done yes? finished`
		`addq.b #1,d6 no? j=j+1`
		`bra nextj do it again`

print i and its factorial, n	`PRINT i,n`	`done jsr addout put d7 (the`
		`; result) onto`
		`; output`

end the external loop	`NEXT i`	`cmpi.w #8,d5 does i=8`
		`bne nexti if not, go`
		`; back for the`
		`; next`

The examples

Each of the programs shown prints out a table of factorials for values between 1 and 8. After 8, the factorials begin to get very big very quickly.

Table 1: Factorial - the iterative way

The idea here is to have two loops, one inside the other. The outer one uses a variable as a counter, starting at one and having one added to it each time the loop executes. After the counter has exceeded eight, the loop finishes. The inner one is used to compute the factorial for each of the counter values given by the outer one.

Basic

Basic, standing for Beginners' All Purpose Symbolic Instruction Code, was originally designed as a language to teach people to program before they learnt enough to go on to bigger and better languages. It's largely because of the home computer boom that Basic has survived as well as it has. On the way it has improved enormously and taken on many of the features of so-called better languages.

AmigaBasic, along with most other variants, is interpreted, which means it is slow. Also it won't allow recursion. The two biggest alternatives, *HiSoft Basic* and *GFA Basic*, both will (and compilers are available for both). AMOS is another interpreted Basic, although a compiler is due in the near future, but currently it will not support recursion.

Blitz Basic, by Memory And Storage Technology, is a new addition to the scene, similar in many ways to AMOS, but compiled. Also available is *Cursor* (FF 347), a public domain compiler for AmigaBasic, but it will not handle some of AmigaBasic's more advanced features.

I've chosen AmigaBasic to show the iterative method, since it is the one language that everybody has access to.

Assembler

A recursive assembler solution could have been written, but it would have just been a lot more difficult to do. Because the multiplication was done using the 68000 MULU instruction, which takes two 16-bit numbers (ie, with a maximum size of 65535), the routine won't work for arguments bigger than nine.

The program was written and assembled with HiSoft's *Devpac* 2. An alternative package is Argonaut Software's *ArgAsm* package.

The segments of the code needed to open and close the DOS library and to output the results held in d7 are not included - they would have trebled the length of the listing.

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without ever having to be translated again. And whereas an interpreter carries with it code to handle every eventuality the language might throw up, compiled code is task specific. If the program never makes output to the screen, then the linker won't bother including the code to print to the screen. (This rather depends on the intelligence of the linker, however. Some of the older ones can be quite inefficient.)

Although compilers produce machine code, this code tends to run slightly slower and takes up more memory than the equivalent program written directly in assembler. Such is the nature of compilers: they are programs designed to cater for all the language's possibilities. Programmers can spend all the time they like trying to find the best possible set of machine code instructions to perform a task. However, it is much easier to write a long program in a high-level language, and the speed disadvantage is negligible unless the program needs to be very fast.

One of the main disadvantages of a compiler is the so-called development cycle. To create a program, the programmer first of all has to load an editor and type the statements in as text. Having done this, the whole lot must be saved as a text or source file. Then the compiler is loaded; and it sets to work producing an object file. After that, the linker has to be loaded and made to produce an executable file. This file is then loaded and executed. If the program has a mistake in it, the editor has to be loaded and the original source file checked through and modified. Then compilation and linking has to be done all over again. It can be an infuriating business.

The best solution is to have both an interpreter and a compiler for the same language. When a program is still being written and tested it can be done with an interpreter; once the programmer is happy with it he or she can compile and link it to create a finished product.

In fact, not all compilers produce machine code. Some produce assembly language code which then has to be translated by an assembler into machine code. Others produce an intermediate code which is then executed by an interpreter. An example of this was the p-code created by early Pascal compilers. P-code is similar to machine code, but is not processor specific, so a small interpreter has to be present whenever the program is executed to make the line-by-line conversion into machine code.

BREAKDOWN OF A TYPICAL RECURSIVE PROGRAM TO CONTRAST

COMMENTS	C	PASCAL
Program titles - only required by Pascal and Modula 2		Program Factorial;
Include necessary libraries for input and output - in the case of Modula-2, these have to be linked in.	#include <stdio.h>	{$I "dh1:pcq/Include/StringLib.i"}
Definition of function to compute factorial, taking an integer j as a parameter. For AmigaDOS this must be saved as a file called 'factor'.	fact (j) unsigned int j; {	Function Fact(j : Integer) : Integer; begin
If j is 1, then return the answer 1	if (j==1) return (1);	if j=1 then Fact:=1

Otherwise, the answer returned is j multiplied by the factorial of (j – 1). In AmigaDOS, several temporary files have to be used for recursion to take place.	else
	return (j*fact(j-1));
	}
		else
		Fact:= (j*Fact(j-1));
		end;

Main harness segment which loops between 1 and 8. For Logo, it is defined as a function which must be called with 'Factorial 1'. The AmigaDOS version must be saved as a file called 'factorial'.	main() {	
Declare i as an integer variable for our loop	unsigned int i;	var i: Integer; begin
Set up the loop	for (i=1;i<=8;i++)	for i:=1 to 8 do begin
print out i and the the factorial of i, by calling the function 'fact' with i as an argument	{ printf("%d %d\n",i,fact(i));	Write(i); Write(" "); WriteLn(Fact(i));
End of the iterative loop. In both Logo and AmigaDOS this is done by calling the main function again with the count variable i as a parameter.	} }	end; end.

Factorial - the recursive way

In this case we have two separate segments of code. The first is a loop which counts from one to eight, as in the iterative examples. Each time through the loop, the second segment of code is called as a function. The function – in this case the bit that actually computes the factorial – is executed and, once it has finished, it passes control back to the statement immediately following the one that called it. (The computer keeps a track of where each function is called from, so the factorial function could be called several times from several different places in a large program, and control would always be returned to the correct place on completion of the function.)

C

C is almost certainly the most commonly used language on the Amiga. It is a compiled language and therefore pretty damn fast (probably the fastest next to assembler).

Because it allows easy access to the low-level facilities of the machine (as does assembler), but combines this with the structured elements of a high-level language, it is an excellent choice for interfacing with or, indeed, writing an operating system.

The program above was written in *SAS C* 5.10. However, it should work equally well with Manx's *Aztec C*. There is quite a large number of public domain compilers available for the Amiga, including *North C* (PDOM 211) and *PDC* (Fred Fish disk 351). See the shopping list on page 90 for a list of all the compilers, assemblers and interpreters mentioned in this article.

Pascal

Pascal, another complied language, was originally designed by Niklaus Wirth as a tutoring language. As with Basic, it achieved much more success than was expected, and has been enhanced by the many libraries written for it since its inception. Many commercial programs are written in Pascal.

The program was compiled with *PDQ*, the public domain Pascal compiler on Fred Fish disk 339. There are no commercial Pascal compilers available for the Amiga as yet, although HiSoft plan to release one in the near future.

Most languages you are likely to come across are what are known as procedural languages. Programs written in such a language carry out one procedure or activity after another in an ordered sequence determined by the programmer. However, there is another type of language – on the surface of it, completely different from the procedural variety – and that is the functional language.

Programs operate on data. They take data as input, do something with it and produce data as output. This is analogous to a mathematical function. For example, the multiply function takes two numbers as input and returns the product of these numbers as output. It gives a 'mapping' between one set of numbers and another. Two numbers in one set always yield the same number in the second set.

Def your func thang

Functional programs are made up of, surprisingly enough, function definitions. Low-level functions, such as multiplication, addition and so on, are predefined in the language. Other functions can be created by combining these together; combination of the resulting functions can create even more powerful functions. The net result is one top-level function. When called with some input data, this function will return the required output. No ordering is specified by the programmer; there are no possible operations other than function definitions.

One of the advantages of programming in this way is that functions are amenable to mathematical reasoning. It is possible to look at a program and prove that it will give a certain output for a certain input. It is common knowledge that there is no such thing as an error-free program, and finding all the errors in a procedural program is largely of matter of trial and error (as it were).

Functional languages are nearly all interpreted. They are still almost exclusively the preserve of the academics. The most common functional language is Lisp (from List Processing, a list being a method of storing data), which is used for research into artificial intelligence.

Looked at from another way, one program is pretty much the same as another. You would expect a program to multiply two numbers together to give the same output for the same input whether written in C, assembly language or Lisp. All programs can be viewed as

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THE WAYS IN WHICH IT IS EXPRESSED IN VARIOUS LANGUAGES

Modula 2	Logo	Dos
MODULE factorial;		
FROM InOut IMPORT WriteCard,WriteLn,WriteString;		
PROCEDURE fact(j: CARDINAL) : CARDINAL; BEGIN	TO Fact :j	.key j,result .bra { .ket } .def result {j}
IF (j=1) THEN RETURN (1);	IF :j=1 [OUTPUT 1]	if val "{j}" EQ "1" echo "{result}"
ELSE RETURN (j*fact(j-1)); END; END fact;	[OUTPUT (:j*Fact :j-1)] END	else eval {j}-1 to t:j lformat "j=%n*n" eval {result}*({j}-1) to t:fact lformat ".k i*n.bra (*n.ket)*nEXECUTE <t:j >nil: factor result=%n ?*n" execute t:fact endif
	TO Factorial :i	.key i .bra { .ket }
VAR i: CARDINAL; BEGIN		
FOR i:=1 TO 8 DO	IF :i<9 [	.def i 1
WriteCard(i,1); WriteString(" "); WriteCard(fact(i),5); WriteLn();	PRINT [:i Fact :i]	echo "{i} " noline execute factor {i} echo >env:tmp{$$} {i}
END; END factorial.	Factorial :i+1] END	eval >nil: <env:tmp{$$} to=env:i{$$} value2=1 op=+ ? if val $i{$$} not GT 8 execute <env:i{$$} >nil: factorial ? endif

Modula-2

This is the successor to Pascal, written by the same person, but with many of the features that C offers. It is a compiled language. Programs in Modula-2 are written as a collection of modules which may be compiled and tested separately, according to the design philosophy of breaking problems into small, manageable segments.

C also allows this approach, but in Modula-2 the permissible interactions between modules may be defined very closely by the programmer, so the compiler can easily spot the erroneous use of any particular module.

The compiler used was A+L's *M2Amiga. Modula-2*, a public domain compiler, is also available on PDOM 60.

Logo

Logo is an unusual one. Most of its commands are concerned with moving an imaginary turtle around the screen and letting it leave a trail behind it, the idea being that young children can learn programming by seeing immediate graphical results from the programs they write. Although interpreted, it allows recursion and the creation of sophisticated functions by the inclusion of smaller, simpler ones.

Despite its humble aims, it is still powerful enough to handle our factorial function. It is not recommended for speed intensive applications, however!

The version used was *ALogo*, a public domain interpreter available on APDC 25.

AmigaDOS 1.3

Just to show it can be done, here is a version of factorial written in AmigaDOS script language. The two sections have to be written and saved separately, the controlling program as 'factorial', the program that actually computes the factorial as 'factor'

Note that the controlling program uses recursion to implement an iterative loop. Normally this wouldn't be necessary, but there seems to be a bug when skipping back to a label if another script has been executed in the meantime.

Recursion is one way around this, but unfortunately, the code is not exactly easy to read, and it runs very, very slowly.

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functions; as black boxes (of which the insides are unimportant) that give certain outputs for certain inputs. So what is the difference between each of the languages? Some are designed with certain tasks in mind, so those particular tasks are simpler to perform in such languages. For instance, Basic is designed to allow string handling (a string is a list of characters – a word, for example, is a string of letters) and so has specific commands to create strings, add them together, remove chunks from them, and so on. Modula-2, on the other hand, has none of these facilities as standard; they can either be called from a Modula-2 library or written by the programmer using simpler elements of the language.

Sometimes, a language will be particularly specialised towards a certain task, such as Lisp towards artificial intelligence. Although any Lisp program could be re-written in assembly language, it would not be sensible to do so if the program was of any length.

Certain applications demand certain languages. In the factorial comparison tables on pages 87 to 89, you will see several versions of the classic factorial program, each written in a different language, pointing out syntactical differences.

Factorial is a mathematical function much used in statistics. The factorial of a number n is written as n!, and is defined as:

```
n! = n*(n-1)*(n-2)*(n-3).....*3*2*1
```

which is to say that the factorial of a number is the result of multiplying all numbers together between one and the number in question. Defined as such, it is only applicable to positive whole numbers.

There are two quite different approaches to produce a factorial program. The first, known as an 'iterative' method, can be done in any language. It is called 'iterative' because the program goes through a series of iterations before the result is produced. Three variables are required to do this. Variables are rather like the letters used in algebra; they are words (or single characters) that represent numbers. Whenever such a word is seen within a program, it is understood to be referring to the number that it represents.

In Basic, a value is assigned to the variable 'Fred' by typing:

```
Fred = 10
```

Then if the statement 'PRINT Fred' is typed, the number '10' will be output. Variable names can be substituted for numbers in mathematical expressions, so that typing 'PRINT 12+Fred-4' would output the result '18'.

In the case of the factorial program, the first variable we need has to hold the value of the number whose factorial we want to find. We'll call this variable 'i'.

We also need a variable that will hold the result of the program. This variable, n, has an initial value of 1. We want to multiply n by every number between 1 and i, according to the definition of factorial. To do this we use a third variable, j. This begins with a value of 1. We multiply n by j, then increase j by one and repeat the process. This goes on until j exceeds the value of i, by which time n holds the factorial of i.

The second method uses a technique called 'recursion'. A recursive function, put simply, is one that makes reference to itself in its definition. With the factorial, the function definition is:

```
The factorial of a number n = n *
the factorial of (n-1)
```

n is known as the parameter of the function. Substituting 4 for n and working through this, it expands to:

```
The factorial of 4 = 4 * 3 * 2 * 1 *
0 * -1 ....
```

What we actually we want is the factorial of 4 = 4 * 3 * 2 * 1. To do this we have to modify our definition by including a 'base case'. This is a termination point, a part of the definition which does not make reference to itself. What we want is:

```
The factorial of n =
   1, if n is 1
   n * the factorial of (n-
1), otherwise.
```

If you imagine the computer working through this, with n=4, it will try and multiply 4 and factorial of 3 together. This means that the factorial function has to be called once more, but with n=3. And so on until n=1, at which point the function actually produces a result. Then the function that called this bottom-level function can also produce a result, and the function that called that one, and so on. Eventually, the function called with n=4 returns the final result. Each time the function is called, the variable n refers to a separate value from that which it referred to in the calling function. The variable is known as a 'value' parameter. This is because, when the function is called with a variable as an argument, this variable's value is copied into the parameter n. But although n and the argument have the same value, they are not the same variable. If n is modified within the function, this will not effect the value of the variable used as an argument. Not all languages allow the use of value parameters, so not all languages allow recursion.

Finally

Hopefully you now have a better idea of which programming language would suit you. Next month I'll be testing each of the compilers available to see which produces the fastest, most compact code. AS

BLITS & BOBS

A compiler is a program which takes another program as its input. Is this program a program or is it data? If the compiler is written in a high-level language, and made to compile itself, is the compiler a program or data?

BINARY BUSTER

Languages – a quick guide:

- **AmigaDOS – best used for those simple utilities that make a programmer's life easier.**
- **Assembler – can be used for anything, but is only used for large programs if speed and compactness are important.**
- **Basic – primarily for beginners, but can be used for text and numerical processing. It's good for simple games too.**
- **C – ideal for accessing low-level system functions, writing operating systems and games. Almost as fast as assembler.**
- **Logo – a graphics-oriented educational language, best used for producing fractal and spirograph-style drawings.**
- **Modula 2 – an educational language. Reasonably fast.**
- **Pascal – predecessor to Modula-2. Similar capabilities.**

Other languages available in the public domain include:

- **Forth (APDC 25) – a low-level language used for systems programming.**
- **Lisp (FF 181) – a functional language used for artificial intelligence applications**
- **Prolog (FF 140+141) – used for expressing logical formulations and artificial intelligence research.**
- **Smalltalk (FF 37) – a slow general purpose language based on the idea that data, rather than program statements, are the important objects in a program.**

SHOPPING LIST

Basic

HiSoft Basic (compiler) £49.95
from **HiSoft**
The Old School, Greenfield
Bedford, MK45 5DE
☎ 525 718181

GFA Basic (interpreter)..................£50
from **GFA Data Media**
(compiler, interpreter required.........£30)
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Berkshire, RG11 1FA
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South Wirral, L65 3EB
☎ 051 357 1275

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Manchester, M1 6NG
☎ 061 228 1831

Cursor (FF 347) (compiler)................£3
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PO Box 801, Bishop's Stortford
Herts, CM23 3TZ
☎ 0279 757692

Assembler

Devpac 2 ....£59.95
from **HiSoft**

ArgAsm.......................................£59.95
from **Argonaut Software**
66b The Broadway, Mill Hill
London, NW7 3TF
☎ 081 906 4253

C

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from **HiSoft**

Manx's Aztec C Professional...£129.95
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Pascal

PCQ (FF 339)....................................£3
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Modula-2

A+L's M2Amiga........................£125
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Logo

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Vector Check

In last month's *Amiga Shopper* Jolyon Ralph gave you the first half of his VectorCheck program. As promised, here is the rest of the code that you will need to complete the program and get it up and running

STRUCTURES

These are the complete structures for EXECBASE, GFXBASE and INTUITIONBASE. VectorCheck reports on a selection of these system variables, there's nothing to stop you enhancing the program to report on the others.

Execbase

BYTE	NAME	TYPE
0	LibNode	Structure
34	SoftVer	UWORD
36	LowMemChkSum	WORD
38	ChkBase	ULONG
42	ColdCapture	APTR
46	CoolCapture	APTR
50	WarmCapture	APTR
54	SysStkUpper	APTR
58	SysStkLower	APTR
62	MaxLocMem	ULONG
66	DebugEntry	APTR
70	DebugData	APTR
74	AlertData	APTR
78	MaxExtMem	APTR
82	ChkSum	WORD
84	IntVects	Structure
276	ThisTask	APTR
280	IdleCount	ULONG
284	DispCount	ULONG
288	Quantum	UWORD
290	Elapsed	UWORD
292	SysFlags	UWORD
300	ResModules	APTR
304	TaskTrapCode	APTR
308	TaskExceptCode	APTR
312	TaskExitCode	APTR
316	TaskSignalAlloc	ULONG
320	TaskTrapAlloc	UWORD
322	MemList	Structure
336	ResourceList	Structure
350	DeviceList	Structure
364	IntrList	Structure
378	LibList	Structure
392	PortList	Structure
406	TaskReady	Structure
420	TaskWait	Structure

continued on page 92

This month I'll start by explaining what VectorCheck does, and how useful it is. Basically it is a program that keeps track of a lot of the Amiga's important internal system addresses, things that most of the time you would never have to touch. It can tell you some interesting things about the way your system is set up.

For example, VectorCheck gives you the current address of four important system libraries. You will find that these addresses vary from machine to machine, and even on the same machine they will sometimes be in different places, depending on what software you have run.

Moving experience

This demonstrates the most important aspect of programming on the Amiga – something most people who come to the Amiga from another home computer don't realise – that hardly anything in memory is at a fixed location. Things tend to move about all over the place.

For example, on your machine the Exec library location will probably be either $676 or $c00676. On my Amiga 3000 it is at $7c007cc, though if I boot up again it might be somewhere else.

It's very easy to think that just because your machine always comes up with one value, that it's the only value for all machines. The Amiga doesn't work that way. You have to assume that everything can (and very likely will) change. The only exception to this is EXECBASE, which we talked about last week – a pointer to EXECBASE is always stored at location $00000004.

Last month I talked briefly about the structure of a library. It consists of a table of JMP $xxxxxx commands extending backwards in memory from the library base address. As I mentioned in that article, there is also code after the base address in memory. It's important to remember that the library's so-called base address actually points to somewhere in the middle of the library structure in memory.

The rest of the code and data that sits in the library is made up of two components. First, libraries loaded from disk (info.library, diskfont.library, for example) have the code for the actual library routines following in memory. ROM-based libraries don't; the routines for these are stored in ROM.

> **"Hardly anything in memory is at a fixed location. Things move all over the place"**

The data that immediately follows the library base address is called the library base structure. This contains all sorts of useful information that the library can tell you, and that you can tell the library in return.

The most important of these is the EXECBASE structure. It is 588 bytes long and consists of lots of system variables. It can tell you what processor your program is running on, whether it is a PAL or a NTSC machine, what tasks are running, and plenty of other useful things.

My VectorCheck program displays some of the following values for you: ColdCapture, CoolCapture, WarmCapture: these are all usually set to zero. They are addresses for programs that are run only when the Amiga has been reset. Some recoverable RAM disks will use these, but it's also the favourite hiding place of viruses.

A virus killer will usually only check memory for certain types of

continued on page 92

JARGON BUSTING

APTR: Amiga PoinTeR, a 32 bit address pointing to something in memory.

BIT: A binary digit, with a possible value of zero or one.

COPPER LIST: A series of instructions (i.e. a program) for the Amiga's display co-processor. This is responsible for performing all the clever changes that allow (for example) the top of the display to be in lo-res and the bottom to be in med-res, both with different sets of colours.

INCLUDE FILES: supplied by Commodore, provide all the offsets needed to access system library routines, and the formats for all system structures.

NTSC: National Television Systems Committee, the North American television and video standard.

PAL: Phase Alternate Linescan, the television and video standard used in the UK and most of Europe.

SIGNED/UNSIGNED: Normally, binary numbers are treated as always positive (unsigned). If negative numbers are required, then a system known as 'two's-complement' is used, whereby the most significant bit is set to zero if the number is positive, one if it is negative. The value of such a negative number can be found by subtracting from it the number one greater than the maximum possible for the given number of bits. So for eight-bit two's-complement, 255 represents the number minus one (found by subtracting 256 from 255).

STRUCTURE: A collection of longwords, words, pointers, bytes and/or other structures defined in a particular order in the include files.

TASK: A program running in memory. Under multi-tasking, each task appears to have its own 68000 processor, without having to worry much about other tasks interrupting it.

UBYTE: An unsigned byte, consisting of eight bits, capable of holding a value between 0 and 255.

ULONG: An unsigned longword, consisting of 32 bits, capable of holding a value between 0 and 4294967296.

UWORD: An unsigned word, consisting of 16 bits, capable of holding a value between 0 and 65536.

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virus, but if you make sure that these three vectors and the KickMemPtr and KickTagPtr are all clear, you are safe from almost every virus threat.

Note that the VectorCheck automatically updates every second. If you think a program of yours might contain a virus, run VectorCheck, check the values, run the program that you think might by dodgy, and look at the VectorCheck screen. If these values have altered, then you've probably got yourself a virus.

Structures & stuff

And now, here are some explanations of information to be found after the base addresses of the three common libraries listed in the Structures column, starting on page 91.

SysStkUpper,SysStkLower:
This shows whereabouts in memory the system stack is. Fiddle with these at your peril!

MaxLocMem:
Gives the size of chip memory in your system. This will either be $80000 for 512k chip machines, $100000 for 1Mb chip machines, or $200000 for machines with 2Mb chip memory (only the Amiga 3000 at the moment).

MaxExtMem:
Points to the end of extended memory (slow memory). This is the memory which lives outside the Amiga's 8Mb fast memory map ($200000 to $9fffff). It's called slow memory because it doesn't have any of the speed advantages of fast memory, but it isn't chip memory because the custom chips can't access it. The memory in the A501 512k card for the Amiga is slow memory, as are most of the 1.5Mb cards for the A500. MaxExtMem will be set to $0 if you have no slow memory, to $c80000 for most people with an A501, and possibly to $d00000 or $d80000 if you have a trap-door card with more than 512k on it.

DebugEntry:
This is a pointer to the built-in debugger in the ROM, called ROMWack. When the machine crashes you have an option to run the built-in debugger rather than Guruing. Most people don't know this, but if you press the right mouse button instead of the left button when the Amiga crashes, the debugger is automatically loaded.

The downside of this is you need another computer, or terminal, connected to your serial port to use it, but by altering the DebugEntry value you can set your own debugger to be used instead. Most other debuggers use the serial port as well, but a friend of mine is writing a monitor that displays everything on the Amiga.

Sometimes you can recover from a guru very easily using a debugger and return to multi-tasking.

The other libraries have base structures too, and I've also given some information from the Graphics library and the Intuition library.

ActiveView:
Displays a pointer to the current active view. A view is a structure that contains information about the current display. Intuition has its own view, and all screens and windows are displayed on the same view. Some programs bypass Intuition and create their own view.

CopInit, LongFrame, ShortFrame:
These are the pointers to three system copper lists. The first is the small initial copper list that jumps to either the LongFrame or the ShortFrame list. The ShortFrame list is only used when there are interlaced screens being displayed, at which time the LongFrame and ShortFrame lists are called alternately.

BlitOwner:
Points to the task that has control of the blitter. If you want to use the blitter directly, you must use the OwnBlit() and DisownBlit() commands to make sure no one else is trying to use the blitter at the same time. This tells you exactly which task is currently owning the blitter. Most of the time it should be zero.

ActiveWindow:
Tells you which window is currently active, if you had not already guessed. All input is directed to the IDCMP connected to this window.

ActiveScreen:
Tells you the screen containing the active window.

FirstScreen:
Tells you the address of the top screen in the Intuition view. If you want to check to see if your screen is at the front, this is where you look.

Copper lists

Finally, as I promised last month, a bit on user copper lists. If you read the *Hardware Reference Manual*, it explains how to set up copper lists by direct register poking. If you read the *ROM Kernel Reference Manual* it explains briefly about setting up a user copper list structure, but not very well. The example code given in the book is wrong, and it's only relevant for C because it uses macros which are not available in assembler. All the commands below are found in the Graphics library.

To set up a user copper list you first have to allocate some memory for a UCopList structure. (It doesn't need to be chip.) Once you've done this, you have to call the (undocumented) UCopperListInit command. The format for this command is:

```
UCopperListInit(UCoplist,
NumberCommands)
   -594      A0        D0
```

It's safe to over-estimate the number of commands you will need. Remember that each MOVE and WAIT you issue are one command each. CBump is not a copper command, so it doesn't count.

Once this is done you can add your copper commands by the following:

```
CMove(UCopList,Register,
Value)
-372     A1       D0      D1
```

D0 is the hardware register to poke (the full address, $dff180 for example), D1 is the word length value to poke into it ($0000 for example).

```
CWait(UCopList, Y , X)
-378    A1        D0  D1
```

This will add a WAIT instruction to your copper list.

```
CBump(UCopList)
-366    A1
```

You MUST issue a CBump command after each CWait and CMove command. This moves the copper pointer along, otherwise each new command would end up overwriting the last one.

Once you have finished adding commands, you must do a CWait for an impossible position (10000,255 is the standard wait) which will tell the copper list where to end.

After that you must disable multi-tasking with Forbid() and set the vp_UCopIns pointer in your ViewPort structure to point to your UCopList. Then enable multi-tasking with Permit(), call the Intuition RethinkDisplay(), and your copper list should be running.

Now go to page 97 for the second part of VectorCheck.

continued from page 91

BYTE	NAME	TYPE
434	SoftInts	Structure
514	LastAlert	Structure
530	VBlankFrequency	UBYTE
531	PowerSupplyFrequency	UBYTE
532	SemaphoreList	Structure
546	KickMemPtr	APTR
550	KickTagPtr	APTR
554	KickCheckSum	APTR
558	ExecBaseReserved	Structure
568	ExecBaseNewReserved	Structure

Gfxbase

BYTE	NAME	TYPE
0	LibNode	Structure
32	ActiView	APTR
36	copinit	APTR
40	cia	APTR
44	blitter	APTR
48	LOFlist	APTR
52	SHFlist	APTR
56	blthd	APTR
60	blttl	APTR
64	bsblthd	APTR
68	bsblttl	APTR
72	vbsrv	Structure
94	timsrv	Structure
106	bltsrv	Structure
128	TextFonts	Structure
142	DefaultFont	APTR
146	Modes	UWORD
148	VBlank	Byte
149	Debug	Byte
150	BeamSync	UWORD
152	systembplcon0	WORD
154	SpriteReserved	BYTE
155	bytereserved	BYTE
156	Flags	WORD
158	BlitLock	WORD
160	BlitNest	WORD
162	BlitWaitQ	Structure
184	BlitOwner	APTR
188	TOFWaitQ	Structure
210	DisplayFlags	WORD
212	SimpleSprites	APTR
216	MaxDisplayRow	WORD
218	MaxDisplayColumn	WORD
220	NormalDisplayRows	WORD
222	NormalDisplayColumns	WORD
224	NormalDPMX	WORD
226	NormalDPMY	WORD
228	LastChanceMemory	APTR
232	LCMptr	APTR
236	MicrosPerLine	WORD
238	MinDisplayColumn	WORD
240	reserved	Structure

Intuitionbase

BYTE	NAME	TYPE
0	LibNode	Structure
32	ViewLord	Structure
50	ActiveWindow	APTR
54	ActiveScreen	APTR
58	FirstScreen	APTR
62	Flags	ULONG
66	MouseY	WORD
68	MouseX	WORD
70	Seconds	ULONG
74	Micros	ULONG

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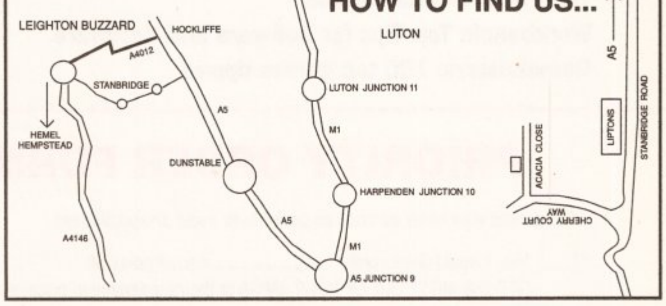
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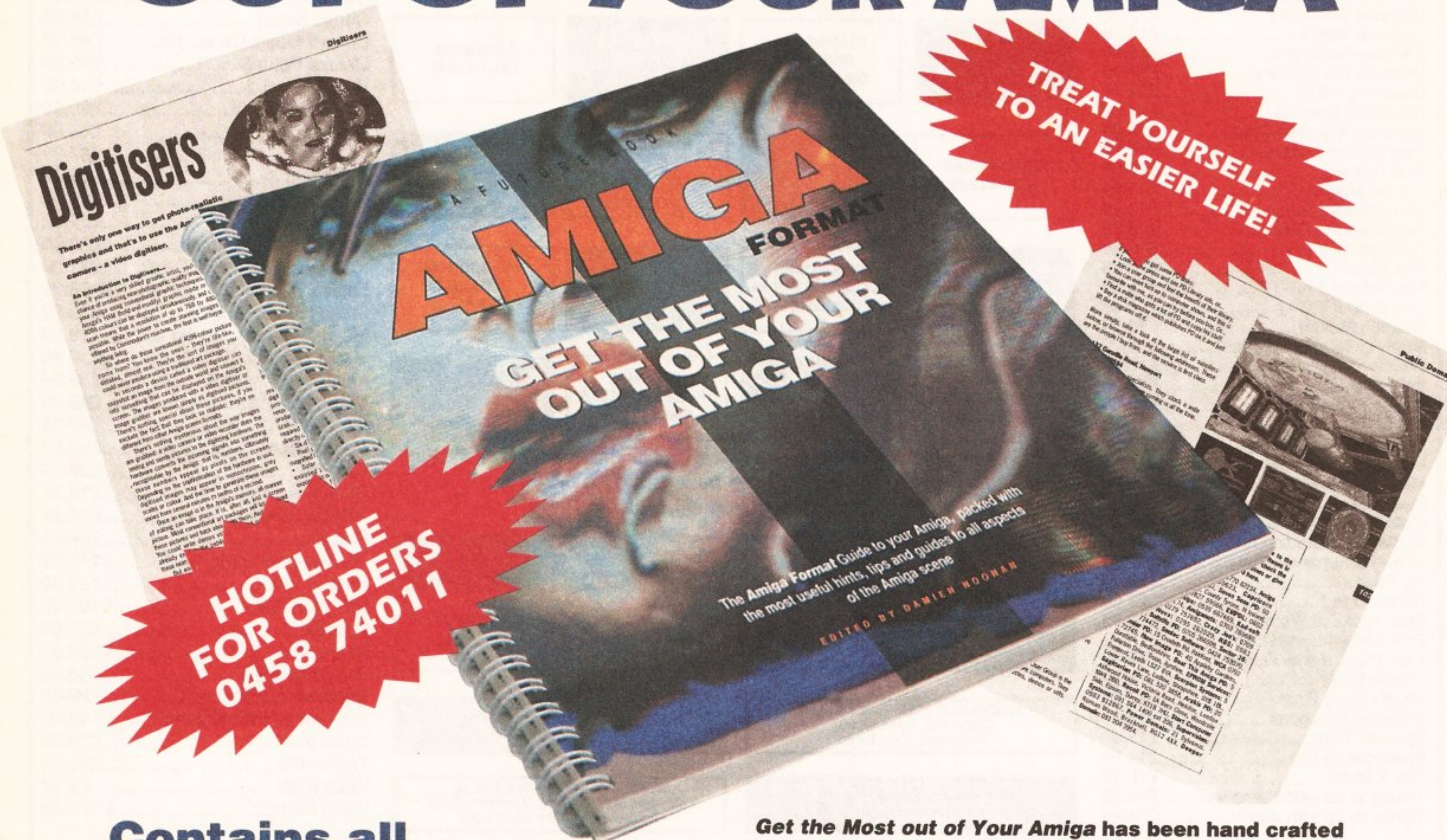
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continued from page 92

VECTORCHECK LISTING PART II • VECTORCHECK LISTING PART II • VECTORCHECK

```
LABEL        INSTRUCT    OPCODE                       COMMENT
* Second half of Vector check program.
* Type this in after last month's code.
             section     subroutines,code
UpdateVecs   move.w      #$18,VPos
             move.l      #50,HPos
             move.l      #Title68k.msg,line2print
             bsr         print
             add.w       #8,VPos
             lea         vec68000,a5
             lea         vec68000.msg,a4
             moveq       #16,d6
.lp          move.l      (a5)+,a0
             move.l      (a0),d0
             move.l      a4,line2print
             bsr         printstring
             lea         31(a4),a4
             dbra        d6,.lp
             add.w       #14,VPos
             move.l      #Lib.msg,line2print
             bsr         print
             add.w       #8,VPos
             lea         libs,a5
             lea         libs.msg,a4
             moveq       #3,d6
.lp2         move.l      (a5)+,a0
             move.l      (a0),d0
             move.l      a4,line2print
             bsr         printstring
             lea         31(a4),a4
             dbra        d6,.lp2
             move.w      #$18,VPos
             move.l      #370,HPos
             move.l      #Execbase.msg,line2print
             bsr         print
             add.w       #8,VPos
             lea         execvec,a5
             lea         execvec.msg,a4
             moveq       #9,d6
.lp3         move.l      (a5)+,d0
             move.l      4.w,a6
             move.l      (a6,d0),d0
             move.l      a4,line2print
             bsr         printstring
             lea         31(a4),a4
             dbra        d6,.lp3
             add.w       #10,VPos
             move.l      #Gfxbase.msg,line2print
             bsr         print
             add.w       #8,VPos
             lea         gfxvec,a5
             lea         gfxvec.msg,a4
             moveq       #4,d6
.lp4         move.l      (a5)+,d0
             move.l      _GfxBase,a6
             move.l      (a6,d0),d0
             move.l      a4,line2print
             bsr         printstring
             lea         31(a4),a4
             dbra        d6,.lp4
             add.w       #10,VPos
             move.l      #Intbase.msg,line2print
             bsr         print
             add.w       #8,VPos
             lea         intvecs,a5
             lea         intvecs.msg,a4
             moveq       #2,d6
.lp5         move.l      (a5)+,d0
             move.l      _IntuitionBase,a6
             move.l      (a6,d0),d0
             move.l      a4,line2print
             bsr         printstring
             lea         31(a4),a4
             dbra        d6,.lp5
             rts
printstring  move.l      line2print,a0
             lea         $14(a0),a0
             bsr.s       hex2text
print        move.l      HPos,d0
             moveq       #0,d1
             move.w      VPos,d1
             move.l      MyRastPort,a1
             CALLGRAF    Move
             add.w       #8,VPos
             move.l      MyRastPort,a1
             move.l      line2print,a0
             moveq       #$1d,d0
```

```
LABEL          INSTRUCT    OPCODE                       COMMENT
               CALLGRAF    Text
               rts
hex2text                                                ; converts d0 into
                                                        ascii hex string at (a0)
               moveq       #7,d1
.lp1           rol.l       #4,d0
               move.l      d0,d2
               and.b       #15,d0
               cmp.b       #9,d0
               ble.s       .less10
               addq.b      #7,d0
.less10        add.b       #$30,d0
               move.b      d0,(a0)+
               move.l      d2,d0
               dbra        d1,.lp1
               rts
               section     vecdata,data
vec68000       dc.l        0,8,12,16,20,32,36,40,44,100,104,108,112,116
               dc.l        120,124,128
libs           dc.l        4,_GfxBase,_IntuitionBase,_DOSBase
execvec        dc.l        ColdCapture,CoolCapture,WarmCapture,SysStkUpper
               dc.l        SysStkLower,MaxLocMem,MaxExtMem,DebugEntry
               dc.l        KickMemPtr,KickTagPtr
gfxvec         dc.l        gb_ActiView,gb_copinit,gb_LOFlist
               dc.l        gb_SHFlist,gb_BlitOwner
intvecs        dc.l        ib_ActiveWindow,ib_ActiveScreen,ib_FirstScreen
HPos           dc.l        0
VPos           dc.w        0
line2print     dc.l        0
colourtable    dc.w        $0eb,$0dc,$0cd,$0be,$0af,$19f,$28f
               dc.w        $37f,$46f,$55f,$64f,$73f,$82f,$91f,$a0f
               dc.w        $b0e,$c0d,$d0c,$e0b,$f0a,$f19,$f28,$f37
               dc.w        $f46,$f55,$f64,$f73,$f82,$f91,$fa0,$eb0
               dc.w        $dc0,$cd0,$be0,$af0,$9f1,$8f2,$7f3,$6f4
               dc.w        $5f5,$4f6,$3f7,$2f8,$1f9,$0fa,$0
MyCmap         dc.w        0,$fff,$888,$444,0,0,0,0     ; colour map
                                                        for screen
               dc.w        0,0,0,0,0,0,0,0
               dc.w        0,$888,$aaa,$ccc,0,0,0,0
               dc.w        0,0,0,0,0,0,0,0
Title68k.msg   dc.b        '68000 Processor Vector values ',0
vec68000.msg   dc.b        'Reset SSP ($0)      $00000000  ',0
               dc.b        'Bus Error           $00000000  ',0
               dc.b        'Address Error       $00000000  ',0
               dc.b        'Illegal Instr       $00000000  ',0
               dc.b        'Div by Zero         $00000000  ',0
               dc.b        'Priv. Violation     $00000000  ',0
               dc.b        'Trace               $00000000  ',0
               dc.b        'Axxx emulation      $00000000  ',0
               dc.b        'Fxxx emulation      $00000000  ',0
               dc.b        'Level 1 Int         $00000000  ',0
               dc.b        'Level 2 Int         $00000000  ',0
               dc.b        'Level 3 Int         $00000000  ',0
               dc.b        'Level 4 Int         $00000000  ',0
               dc.b        'Level 5 Int         $00000000  ',0
               dc.b        'Level 6 Int         $00000000  ',0
               dc.b        'Level 7 Int         $00000000  ',0
               dc.b        'Trap #0             $00000000  ',0
Lib.msg        dc.b        ' Current library locations     ',0
libs.msg       dc.b        'Exec.library        $00000000  ',0
               dc.b        'Graphics.library    $00000000  ',0
               dc.b        'Intuition.library   $00000000  ',0
               dc.b        'Dos.library         $00000000  ',0
Execbase.msg   dc.b        '   Execbase structure info     ',0
execvec.msg    dc.b        'ColdCapture         $00000000  ',0
               dc.b        'CoolCapture         $00000000  ',0
               dc.b        'WarmCapture         $00000000  ',0
               dc.b        'SysStkUpper         $00000000  ',0
               dc.b        'SysStkLower         $00000000  ',0
               dc.b        'MaxLocMem           $00000000  ',0
               dc.b        'MaxExtMem           $00000000  ',0
               dc.b        'Debug Entry         $00000000  ',0
               dc.b        'KickMemPtr          $00000000  ',0
               dc.b        'KickTagPtr          $00000000  ',0
Gfxbase.msg    dc.b        '    Gfxbase structure info     ',0
gfxvec.msg     dc.b        'Active View         $00000000  ',0
               dc.b        'Copinit address     $00000000  ',0
               dc.b        'Long frame clist    $00000000  ',0
               dc.b        'Short frame clist   $00000000  ',0
               dc.b        'Blit Owner          $00000000  ',0
Intbase.msg    dc.b        'Intuitionbase structure info   ',0
intvecs.msg    dc.b        'Active Window       $00000000  ',0
               dc.b        'Active Screen       $00000000  ',0
               dc.b        'First Screen        $00000000  ',0
DosName        dc.b        "dos.library",0
GfxName        dc.b        "graphics.library",0
IntName        dc.b        "intuition.library",0
MyTitle        dc.b        "Vector Checker by Jolyon Ralph. (C) Amiga Shopper 1991.",0
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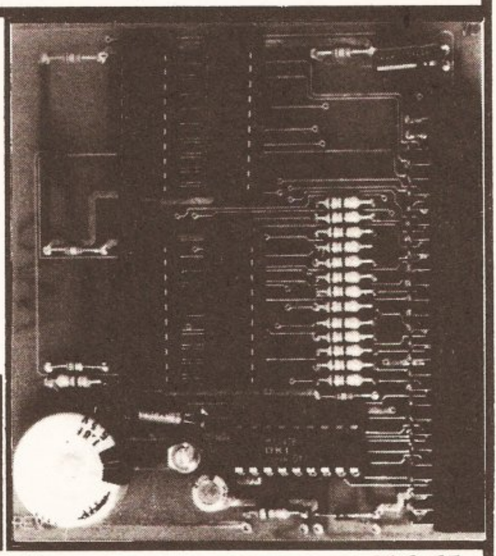
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Modem. Any speed up to V22bis, Hayes compatible, BT approved, cable, manual. Preferable with MNP connection. Amiga compatible only. Tel. Neil after 6 pm on (074488) 2835.

I'm looking for a KCS PC powerboard and an action replay MKII cartridge. Sensible prices only. Write to Mark, Box H, Esyllt, Plas Gwyn, Llandaff, Cardiff CF5 2YQ and include phone number.

Please can some kind soul sell me their copy of Shanghai by Activision? I'm getting desperate! Phone Sara on (0603) 407060.

Colour monitor for Amiga A500, condition not important but must be cheap and in working order. Phone Mick on (0322) 558389 or (0860) 546650.

A590 Hard disk drive wanted. Please phone John on (081) 462 2713 (home or (081) 681 2666 (work).

Wanted! Amiga artists for graphical production of AMOS related projects. 100% reply. Send example stuff to Mark Venn, 3 Britten Drive, Goodleigh Rise, Barnstaple, North Devon EX32 8AQ.

Minigen Genlock or similar cheap Genlock. Tel. Steav on (0782) 48287.

Want to swap DPpaint 2 manual for Devpac 2 manual. Write to: Mick, 70 Lonsdale Street, Nelson, Lancs. BB9 9HG. No photocopies please. Hi to Sparkey and Sonic.

Action Replay wanted new or old model. Must work! Also some decent PD utils. for the Action Replay. I will pay £35 and for the PD approx 50p without disks. D. Leadsom, 18 Scarisbrick New Road, Southport, Merseyside PR8 6PY. Tel. (0704) 532640 between 5pm – 8pm.

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Our group requires coders to join our two other coders, we have two extremely good graphic and sound artists. Tel. Simon (081) 398 6289 or Mark on (081) 398 6071.

BBC MOD B with disk drive and cass player wanted. Please contact Egil Lovang, Motzfeldts Gt. 7, Oslo 1, N-0187 or tel. Norway 2-17-71-80.

Help! I would like Pacland for the Amiga. Searched everywhere for it to no avail. Please help me. Will pay for it. Contact S Johnson, 138 Guildford Street, Grimsby, South Humberside DN32 7PW.

Postage stamps for charity. Also broken A500 internal disk drive to mess about with please. B. Belton, 5 Nep Close, Henfield, Sussex BN5 9HB. Tel. (0273) 492885.

Cheap Modem for Amiga A500. Will pay up to £70. Software not required. Also, for sale, Cumana external drive. John Mullen, 62 Lonsdale Street, Workington, Cumbria CA14 2YD. Tel. (0900) 61574.

Demo group Goldfire seeks good graphic artist, ideally in South East. Tel. Tom on (0462) 457514.

Wanted: Diskdoctor Clone and any good P.D. music sample rippers. Have good number of P.D. disks to swap in return. James Bell, 29 Westonbiry Court, Ebley Close, London SE15 6BH.

Wanted Now! I need a 2nd hand colour monitor or portable TV before the wife kills me for hogging the telly. Save my life!!! Tel S Crevillen on (051) 645 5922.

Wanted: Good condition second hand disk drive and 0.5K ram. Will pay good price. Also back issues of Amiga Format 1 to 15 wanted + disks. Andrew Monk, Mendale, 22 The Strand, Mablethorpe, Lincolnshire LN12 1BQ. Tel. (0507) 477428.

Amiga 500 wanted desperately, in full working order, with documentation. Cash awaits, will collect within 100 miles of the Watford area. Tel. Trevor on (081) 428 0332 evenings.

Wanted: Hard drive for Amiga 1000. J. Bryson, 37 Kingsdown Mobile Homes, Kingsdown, Swindon SN2 6PG. Tel. (0793) 827663.

The Pennine Amiga Club: requires members for our free user group. For more information contact Simon at 193B Oakworth Road, Keighley BD21 1RE. Greets fly out to Paul at Ultimate P.D.

Free box of disks to the first person to lend me the manuals and disks for an Amiga 2000 XT Bridge Board. Tel. Stuart (0224) 323737.

Fellow Amiga owners – have you got hidden away somewhere any 'old' computers you want to sell e.g. ZX81, Electron. If so, tel. (061) 797 0179. (I collect computers).

Wanted: books, hardware, software, chips, drams, boards, P.C., C.P.U., and keyboard. Anything Amiga related. Send details to F.J. Saunders, 23 North Street, Burnley BB10 1QJ, Lancs.

"A590 Users Group" and Public Domain swaps. Second hand "Nordic Power" cartridge. Also, for sale: £30 o.n.o. Contact Alex, 26 Milldown Ave., Goring-on-Thames, Reading, Berks RG8 0AS.

Wanted: Predator for the Amiga. Will swap Outrun, Bionic Commando, or Joe Blade 1 and 2. Write to C.J. Sterland, 58 Tennis Court Drive, Leicester LE5 1AQ

A mail merge program that can work with the word processing program "Scribble" on an Amiga 500. Very important. Contact James on (0367) 240913.

Please does anyone out there have a disk of U.S. Gold's "Side Arms" for sale or swap. I just can't get one anywhere. Please help! Stephen Keen, 34 Elizabeth Place, Pewsham, Chippenham, Wilts. SN15 3UP. Tel. (0249 660380 evenings.

Serious stuff. I'm currently compiling a serious PD software collection. Fractals, Utilities, Graphics, etc. for distribution. Send to D L Bainbridge, 16 George Street, Ystrad Mynach, Hengoed, Mid-Glam CF8 7BJ. All disks returned.

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Issue 2

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For sale: Korg DW 8000 synth – poly, midi comp, digital, down loadable. £300 o.n.o. Tel. Andy on (0253) 724607.

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R. Jones, 12 Highfield, Sacriston, Durham, DH7 6HN Tel. (091) 371 1781.

Protext ver 5-04 as new. Also some games. Best offer secures. Phone John on (081) 462 2713 (home) or (081) 681 2666 (work).

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Digi-View gold version 4.0 including Digi paint. Hardly used. Best offer will be taken. Phone Damian on (0253) 828308.

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2.5Meg Amiga 500, Philips CM 8833 monitor, external drive, video machine, software, utils, and games. £1400 o.n.o. Call Simon (061) 440 9861. No time wasters please.

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Amiga 500 complete with A590 hard drive with 2 megs ram fitted. Extra floppy

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Amiga s/ware. ZVP video studio £55 inc. post. TV text £45 inc. post. 9 various games £2 – £5 each. £35 the lot inc. post. Tel. John on Salisbury (0722) 790776.

Amiga orig. games, lots of titles cheap! Sae 13 Bournville Lane, Birmingham or tel. (021) 459 7576. PD swap wanted! Also 1/2 meg sale £28 inc!

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Commodore 64 for sale with disk drive and printer, music maker, joysticks and lots of software on disk or tape. £250 o.n.o. Contact Harold Garvin, 26 Newmarket Street, Coleraine, Co. Londonderry BT52 1EH.

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Look! Old model C64, 1541 disk drive, C2N tape recorder, cartridges, joystick, mags, 378 original games and other software on tape and disk, only £250 o.n.o. Tel. Howard on (02406) 3273 (Bucks.)

Citizen sheet feeder bought for £80, will sell for £30. Never used. Also printer wanted £150 tops for Amiga 500. Contact John on (0749) 679250 after 5 pm.

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2MB 256X4 Ram. £75 inc. p&p 6MB. Tel. Christopher on (0926) 334897 (evenings).

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Amiga Batpack, A501 memory upgrade, star LC10C printer, Philips CM8833 colour monitor, external drive, Midi interface, Music-X, leads, covers, s/ware, books, boxes, for only £600! Phone Steve on (071) 383 4562.

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Star LC-200 colour printer £185 as new. Reason for sale – need colour inkset printer. Any offers. Contact Alan Gordon, 21 Mt. Pleasant, Guiseley, Leeds, W. Yorks. LS20 9EB. Tel. (0943) 870070.

ICD AdSpeed Amiga 16 mHz 68000 Board. Brand new. Unopened unwanted gift. Worth £200. Sell for £130 or swap for 2mb Ram and Board for 132000. Tel. Nigel on (0462) 682140.

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Spirit 2MB mem. board for Amiga A500. Fully populated. Still in box. As new. Tel. Adrian anytime Runcorn (0928) 565504.

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14 genuine unused boxed games unwanted gifts inc. Photon Paint, F29 Retaliator, Rainbow Islands, Cricket Captain, all for only £50. Will sell separately. Ring and make an offer! Tel. Keith weekends on (023) 024940.

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Amiga games cheap boxed with manuals (Xenon II, Residi, etc.) Also lots of Spectrum H/ware, mags and s/ware (multiface 150 games 150 mags) Phone Colin for offers/details on (0767) 600533 after 6 pm please.

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Amiga 500 for sale, £250, A590 hard drive with 2 meg ram, £275, external drive £25, Philips CM8833 monitor, £200, or £700 the lot. Tel. Richard on Sevenoaks (0732) 459483.

CBM Pet 8096 SK system for sale, includes double disk drive and printer. Any offer considered. Tel. Azim on (0533) 419964.

Sega Megadrive fantastic condition. Two months old, barely used. Plays US/UK/Japan games. Two games: John Madden Football, Super Monaco GP. Joypad and joystick. Bargain £200. Tel. Paul on (0923) 263511.

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Master sound sampler with cartridge, software. GFA basic interpreter, compiler software with manuals. Hardly ever used £70. Contact Dave Brooks, 7 Molly Huggins Close, Weir Road, Balham, London SW12 0LT.

Amstrad CPC 464, disc drive, mono monitor, TV modulator, joystick, 100 games, 100's magazines, word processor, multiface, bargain only £200. Tel. Gary on (0480) 61253.

Alegra 0.5mb memory exp. unit for Amiga 1000. Can be upgraded to 2mb. £80 o.n.o. Also dot matric and daisy wheel printer for sale. Tel. P. Ducker on (0305) 770453 after 6 pm.

Professional Page V1.3 new original unregistered. Tel. Peter on (081) 462 1362 evenings.

Serious software prowrite 3.0 £40 DPAINTZ £10 swift animate 4DJR £30 Pagesetter II £30 Analyse £20, Photon Paint £10, Amiga Vision £50. No offers. Tel. Howard on (071) 582 7421.

Various games for sale or exchange. Twenty in total. Also synthesiser and modem. No reasonable offer refused. Tel. W. Wiedenheoft on (0767) 317897.

Angus (8371) chip £20. Kick Start 1.2 chip £15. STD mouse and holder £10 plus p&p. FF1 and Roger Rabbit to sell or swap. Tel. Viper on (0473) 713715 between 6-9 pm.

Amiga 500 1 meg second drive, some software, colour TV, Fatter Agnus Machine £350. Tel. (0425) 654460.

A500 with LC-10 colour printer. All leads manuals etc. Supplied under warranty. Colour monitor, loads of games etc. Will sell separately but prefer to sell as whole £700 o.n.o. Marcos Scriven, Tanglewood, Half Noon Lane, Redgrave, Suffolk. Tel. (0379) 890306.

Unwanted gift Their Finest Hour, Battlehawks, F29 Retaliator. All boxed and complete. £10 each. G. Briggs, 63 Rievaulx Way, Guisborough, Cleveland TS14 7AY. Tel. (0287) 633084.

Amiga 1/2 meg memory upgrade with battery backed clock, little used £20. Also Psion Organiser XP model 32K ram and extra software, boxed with manuals £100. Tel. M. Atkinson, (0532) 610662

Amstrad PPC512 fully IBM compatible, portable computer with twin 3 1/2" drives with printer, monitor and software. £350 ono Tel Fahim on (041) 339 2200.

Amiga System Programmers Guide (Abacus) £17, CP80 printer Epson compat., little used £50, Fun School-3 Over-7s £10, Battlechess £10 or sensible offers. Te.l. A. Bratt on (0225) 873033 evenings.

Sinclair Z88 laptop computer with 128K ram upgrade, serial to parallel printer lead, RS232 lead, power supply £180 o.n.o. or will exchange for Amiga peripherals. Tel. D.Roberts on Leyland (0772) 453470.

Panasonic KXP 1081 printer with extra ribbon. V.G.C. £100 o.n.o. Also source codes and programming contacts wanted. No swappers. Contact Darryl, 168 Furlong Road, Goldthorpe, Rotherham, South Yorkshire or tel. (0709) 881257.

14 original games for sale including: Lotus Esprit, Midwinter, Super Cars, Xenon 2, Xybots. Each game is half price or less!! Tel. Trevor on (0934) 833736 after 6 pm for more details.

Protext 4.2 complete with 2 disks and 322 page manual, cost £99.95. Sell for £35 plus p&p or exchange of video titler, DTP etc. D Whittle, 18 Russet Close, Worcester WR2 6EL. Tel (0905) 424066.

Amiga games Drakkhen, Treble Champions, £6 each. Edition One compilation £9. All boxed. Back issues N.C.E., Amiga Computing, Amiga User, etc. 65p-£1.10 includes postage. Tel. A. Foster on (0703) 676949 after 7 pm.

Amiga A500, Memory expansion, second disk drive, loads of original games and other software. Bargain at only £350. Tel. Mike on (071) 249 2313 after 6 pm.

40M hard disk for A500 vortex model, Autoboot, £350. Star LC-10 colour printer £130. Commodore 10845 colour monitor £140. Also games! Tel. J. Cameron on (0463 790340 for details.

Sharp JX-9500 laser printer, 3 months old, cost £1029, hardly used, will accept any offer around £875, has to be seen! Tel. Michael on (081) 504 4177.

Days of Thunder, Shadow of the Beast II £10 each o.n.o. Back to the Future £7 o.n.o. Tel. Stephen on (0745) 591432 after 5 pm.

Genlock NNO 8802 & Video title program: £230 o.n.o. Also, wanted: Hard drive A590 with 2 m6 & new video title program. Hemant Mistry, 72 Leire St., off Melton Road, Leicester LE4 6NT Tel. (0533) 664682.

One Geniscan 4500 complete with version III software. Very good condition, at only £110 inc p&p. Tel. Ray on ((092575) 5316.

Do you use the CLI? CLI bench contains more commands and other extras. Send 50p and blank disc to B. Vince, 51 Anglesey Ave., Hailsham, East Sussex BN27 3BQ.

C64 for sale including mouse and paint program. Lots of games, excellent condition, all boxed. Only £100. Tel. R. Roberts on (081) 960 0881 after 5 pm.

PERSONAL

Amos contacts wanted. For hints, tips and demos write to Paul Thompson, 12 Shadows Lane, Mossly, Ashton under Lyne, OL5 9BS

Interested in Virtual Reality? Want to swap info/ideas on the future? Write now! Also Amiga PD, swap yours for mine. Ian, 29 New England Road, Brighton, Sussex BN1 3TU.

Hi! I'm a 15 year old fun lovin' male looking for a 14-15 year old female pen pal. Write to: John, 52 Bramhall Lane, Davenport, Stockport, Cheshire SK2 6HZ.

All Format 100 page colour magazine including cheats, tips and great offers. Send sae to Dave Clark, 3 Thornton Terrace, Palmersville, Tyne & Wear NE12 9QH for details.

Help needed with C language. I know the very basics but am finding it difficult. Paul, 84 Beresford Road, Lowestoft, Suffolk NR32 2NG.

Jez of Arena says Yo! To: Red Devil, Mantra, Brick, Maxtor, Bilbo (where is my video?), Adam-M-, Andy, Ian XTC, Mole and Dan of Anarchy!!!.Phone me soon! J Dutton (0704) 78493.

FANZINES

Here Be Dragons. New computer mag, all formats, news, reviews, features, etc. Only £1.50 including P&P. Send cheque payable to: Here Be Dragons, 34 Paston Road, Mundesley, Norfolk NR11 8BW.

Quartz-new Amiga fanzine inc. games, music, art, cheats, utls, etc. Only £1.50 = 50p P&P. Send to Martin Turner, 3 Ellis House, Shernhall Street, Walthamstow, London E17 9JA.

Where To Camp in France. The best computer fanzine the world has ever seen. Now Amiga owners can enjoy it too! Send £1.50 now to Peter Templeman, 17 Cotherstone Dr. Acklam, Middlesbrough, Cleveland TS5 8JJ.

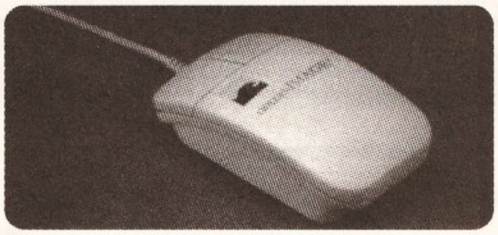
Great new Amiga fanzine: Amoeba Quarterly. Send sae for details to David Black, 369 Wanstead Park Road, Ilford, Essex IG1 3TT.

DNA Disk based mag. Loadsa utils, tips, PD, games and serious stuff reviews. £2 the lot!Cheques/PO payable to F. Res. Contact: DNA, 3 Cypress Walk, Barrow in Furness, Cumbria LA13 0JY

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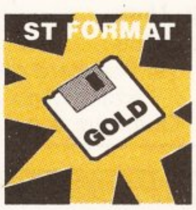
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All Fujitsu drives fully support synchronous SCSI transfer (with Amiga 3000 and some Amiga 2000 controllers)

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150Mb SCSI tapestreamers now available.
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Far too many drives to list here, please ring for details and prices. MFM, RLL, ESDI, SCSI and AT drives available.

Amiga SCSI controllers

You will need a SCSI controller to use any of the hard drives listed above. Please ring for the latest prices on ICD, Microbotics and Commodore controller cards.

RAM Chips

256x4 80ns DRAM (for A590, A2091, A540, etc.)...£38 per Mb
1 Mbx1 80ns DRAM (for A2058, 8-Up, etc)..........£40 per Mb
1 Mbx9 80ns SIMMS (for GVP Series II, etc)..........£42 each
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Plus 3.5" SCSI Hard disks (Quantum)

52Mb, 17ms, 1" high..........£249
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170Mb, 15ms..........£689
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All Plus hard disks have a 64kb inbuilt cache which gives an 11ms read access time.
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FREE PUBLIC DOMAIN

Buy any hard drive over 100Mb from us, and we will put on as much free Public Domain software for the Amiga as you want! Just say how much you want, you can list specific Fish disks (1 to 410) in your order if you wish.

Almathera Systems Ltd.

Tel (081) 683 6418 Fax (081) 689 8927
Challenge House, 616 Mitcham Rd, Croydon, CR9 3AU.

All prices **include** VAT and delivery.

Data cables and 5.25" mounting frames are extra. Free PD can only be provided for controllers that support Commodore's Rigid Disk Block standard (CBM A2091 & A590, GVP Series II, Microbotics Hardframe, ICD etc). Please check your controller manual.

All prices are correct at time of going to press. E&OE. All trademarks respected.

BUYERS' GUIDE

Amiga Shopper's *quick-reference super-test summary for the discerning buyer of hard and floppy disk drives for the Amiga*

VE REVIEW ● HARD DRIVE REVIEW ● HARD DRIVE REVIEW ● HARD DRIVE REVIE

SHOPPING LIST

GVP Series II A500-HD+ (50Mb)....................£599
from **Power Computing Ltd**

GVP Series II A2000-HC+8 (173Mb)....................£849
from **Power Computing Ltd**
44a Stanley Street,
Bedford
MK41 7RW
☎ 0234 273000

Expansion Systems DataFlyer 500 (48Mb)....................£389.95
from **Trilogic**

Expansion Systems DataFlyer 2000 (48Mb)....................£349.99
from **Trilogic** Unit 1,
253 New Works Road,
Bradford,
BD12 0QP
☎ 0274 691115

SupraDrive 500XP (40Mb)..£489
SupraDrive WordSync 2000 (52Mb)....................£449
from **Surface UK**
5 Rockware Avenue, Greenford,
Middlesex,
UB6 0AA
☎ 081 566 6677
and
WTS Electronics Ltd
Studio Master House,
Chaul End Lane,
Luton,
Beds LU4 8EZ
☎ 0582 491 949
But try shopping around.

Amiga A590 (20Mb)............£299

Amiga A2094 and A2090A controller board (40Mb)....................£1209.80
from various suppliers.
Don't forget to **shop around.**

AMIGA SHOPPER BEST BUY

AMIGA SHOPPER BEST BUDGET BUYS

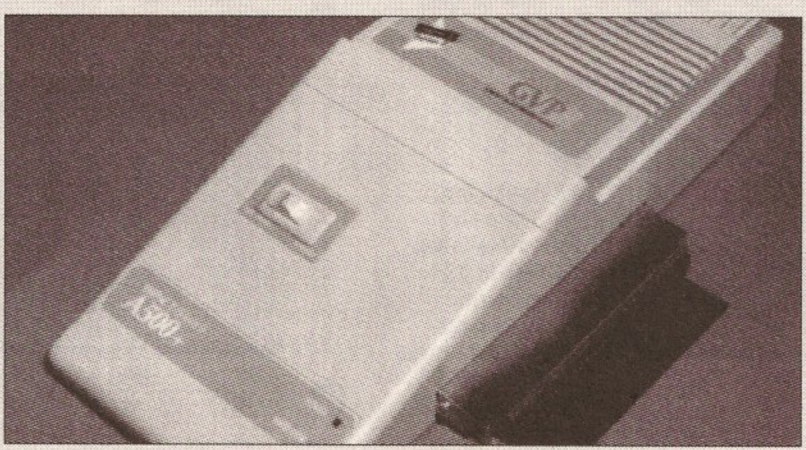
● 500 ● 500 ● 500 ● 500 ● 500 ● 500 ● 500

(A500) GVP IMPACT II+ 50MB

Superb build, excellent aesthetics and blinding speed make this the best A500 drive featured. And from what we saw, it will take some beating. The only choice for the power user with money to burn.

(A500) COMMODORE A590

No, we have not gone totally potty. It's slow and only offers 20Mb of storage, but it's a good workhorse for under £300 and guaranteed to be 100% reliable with other Commodore kit.



The GVP Impact II is the tops when it comes to A500 hard drives.

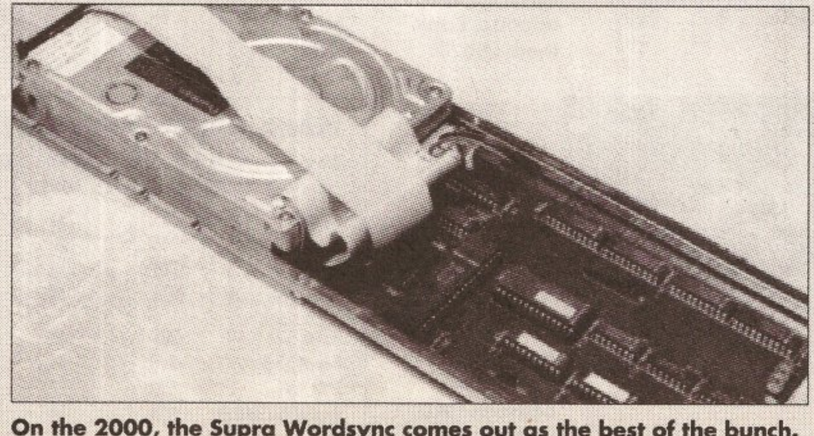
● 2000 ● 2000 ● 2000 ● 2000 ● 2000 ● 2000

SUPRA WORDSYNC 2000

It is the fastest drive we tested, comes with plenty of storage for the price, and it all fits in a single expansion slot. It comes with versatile, user-friendly software too. What more could you ask?

GVP SERIES II A2000 HC+8

The review model had a 173Mb drive, but Power sells a 40Mb one for £399. It performs almost as well as the Supra, is supported by good software, and has the capability to add RAM on board.



On the 2000, the Supra Wordsync comes out as the best of the bunch.

This buyers' guide is compiled from the comprehensive floppy disk survey conducted in the free sample issue of *Amiga Shopper*, given away with issue 21 of *Amiga Format*, and the exhaustive hard drive trial published in *AS* issue 1. We have included as much information as possible to help you make your buying decision.

For a fuller analysis you should purchase the relevant back-issues containing the complete surveys. *Amiga Format* issue 21 can be bought for £3.85 and details on getting hold of issue one of *Amiga Shopper* can be found on page 111.

Our buyers' guide pages will be updated as often as possible to ensure you get the full facts on all the top hardware and software available for your Amiga. We take great care to ensure the accuracy of our advice, but if you are aware of any inaccuracies or omissions from the guides, please notify us in writing so that we can continue to give you the most comprehensive and up-to-date Amiga information possible.

The guides will be run on a rota basis as we conduct more and more of them, because in a few months time there won't be room to run all of them in one issue.

If there is a comparison we haven't done that you are keen to see or there are any rating categories we have not included that would help you to make your buying decision, then let us know about them. The address for updates and corrections is:
Buyer's Guide Update,
Amiga Shopper,
30 Monmouth Street,
Bath BA1 2BW.

continued on page 106

continued from page 105

Hard drive tests

Unlike floppy drives, the hard variety perform at differing speeds depending on the disk controller and the actual disk drive supplied with the unit.

See the figures for how the drives performed. The first thing was to measure the time taken for a low-level format. Normally, hard disks are supplied already formatted, with Workbench and Extras (and sometimes some manufacturer specific tools) installed. But in some cases it might be necessary to re-format: ie, if you need to change the number or size of the partitions. The timings for the format are given in seconds per 10Mb, since larger drives obviously take longer to format.

The time taken to format and initialise a boot partition of 10Mb – the partition where all subsequent tests were performed – was also measured.

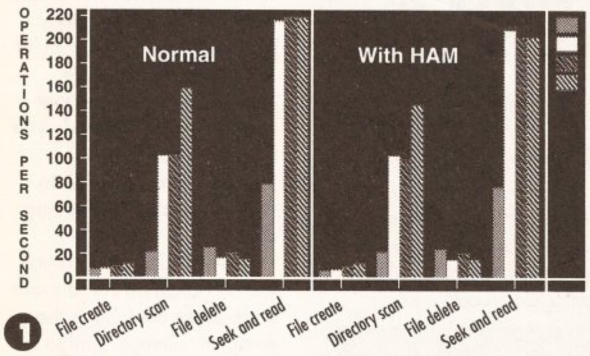
Having done this we installed Workbench on the partition (each of the models come with software to do this) and measured the time taken for a cold boot from the hard disk.

To simulate the performance of the drives in everyday use, we used *DiskSpeed* 1.0 by Michael Sinz of MKSoft Development. This creates 256 files on the disk, scans the resulting directory list twice and then deletes the files, taking timings for each in terms of number of operations performed per second. A seek and read test is then executed, whereby a 256k file is created and sections of data at the beginning, middle and end of this file are sought and read 150 times each. It also tests the speed at which the drive can write and read raw data. Results are given in number of bytes read/written per second.

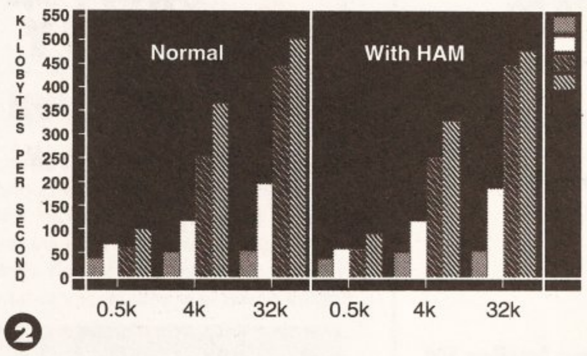
Once these tests were done, we ran them again but this time with a HAM picture at the front of the screen. The reason for this is that the custom chips have to do a lot of work to display a HAM image, and there will be some contention between them and the hard disk for access to memory.

Finally, we measured how long it took for a typical program to load from each drive. For this we chose *Deluxe Paint* III.

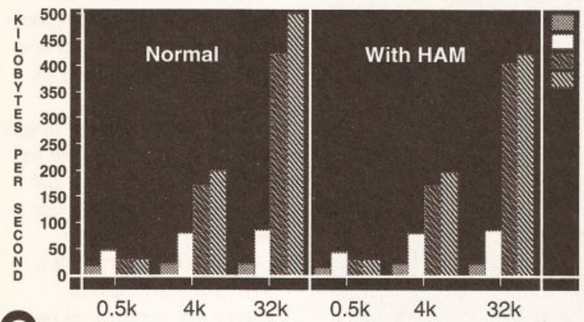
HARD DRIVE SPEED TESTS ● HARD DRIVE SPEED TESTS ● HARD DRIVE SPEED TESTS ● HARD DRIVE SP



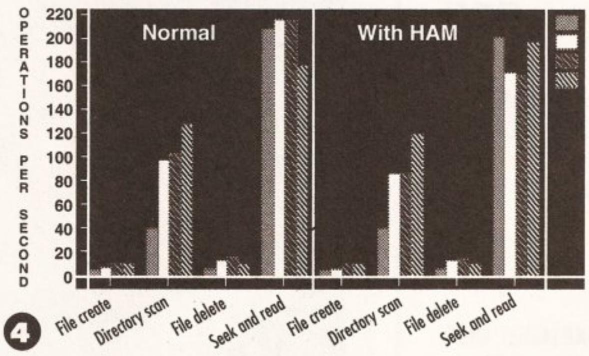
1 A2000 speed tests show speed of file handling and directory access, with Dataflyer on a flyer in seek and read.



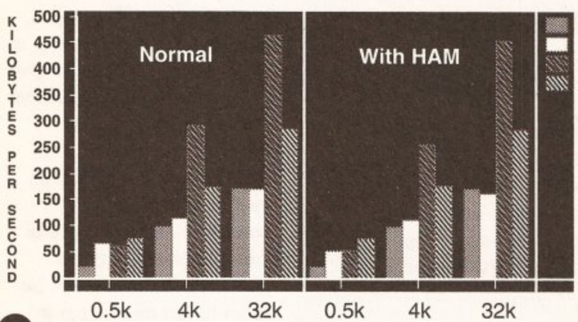
2 The raw read speed tests show the SupraDrive to be streets ahead of the pack, with the GVP snapping at its heels.



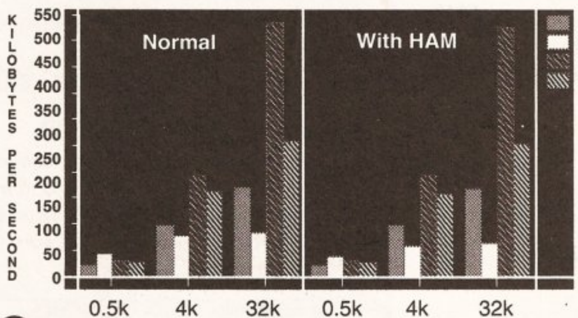
3 Again, the Supra and GVP lead the field in the raw write stakes, but Dataflyer runs well with a 0.5k buffer.



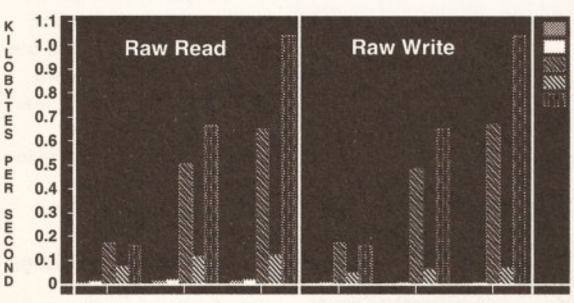
4 There was little in it as all A500 drives turned in a fairly even showing for the file handling and directory access speed shakedown.



5 The GVP left the rest for dead at higher buffer sizes, with the Supra 500 taking the raw read speed honours down there at 0.5k.



6 Again, the all-singing GVP did all right at raw write, with the DataFlyer fading away badly as the buffer was cranked up.



7 Now compare how other devices fared in the raw read and write tests. Notice the difference between RAD and RAM.

Hard drive speed test results / Sizing up

Drive	Format 10Mb Partition (secs)	Cold Boot (secs)	Load *DPaint* III (secs)	DIMENSIONS (mm) Length	Width	height
A2094	605	35	9	N/A	N/A	N/A
DataFlyer 2000	245	40	3	N/A	N/A	N/A
GVP 2000	110	40	2	N/A	N/A	N/A
SupraDrive 2000	N/A	45	3	N/A	N/A	N/A
A590	205	45	3	260	112	65
DataFlyer 500	240	35	2	377	145	62
GVP 500	520	23	1	330	135	62
SupraDrive 500XP	N/A	58	2	285	107	60

Floppy disk drive suppliers

When you make your choice of disk drive, where do you go? The first stop will probably be your local dealer, but few dealers stock the floppy drives listed here – at least, not under their own names. Many distributors now value-add to third-party disk drives by packing them in fancy boxes and giving things away with them. This is in evidence with the Roctec units, which we believe are badged as Qtec (from Trilogic on 0274 6911115) and Xetec. There's nothing at all wrong with this, but it helps to know exactly what you are buying. If in any doubt, get the dealer to open the box and take a look for yourself.

Drives most commonly found at local specialist dealers tend to be the ever-popular Cumana models, whereas those sold by mail-order firms are usually made by Power Computing. Again, if in doubt, make sure to ask your dealer.

Roctec units are more difficult to find in their native form. Anyone interested in getting one of the slimline models can contact Roctec's importer, Direct Disk Supplies.

The Commodore A1011 is freely available; any Commodore appointed dealer will either stock them or be able to order them. However, you should not contact Commodore directly as Commodore doesn't sell them directly.

RIVE TEST RESULTS ● FLOPPY DRIVE TEST RESULTS ● FLOPPY DRIVE TEST ● FLOPP

Drive	CBM A1011	Cumana CAX354	Power Single	Power Dual	Golden Image	Roctec RF302	Roctec RF332	Roctec RF504
Internal PSU	No	No	No	Yes	No	No	No	No
Throughport	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Compatibility	OK	OK	OK	OK	OK	OK	OK	OK
Disable switch	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
40/80 track	No	No	No	No	No	No	No	Yes
Height (mm)	50	35	32	66	46	32	22	52
Width (mm)	135	116	107	107	143	103	115	148
Length (mm)	200	200	223	241	223	208	192	280
Weight (g)	1,000	700	1,000	2,010	1,000	940	880	2,000
Lead length (mm)	490	610	580	640	790	685	675	665
Plug type	Moulded	Shell	Shell	Moulded	Moulded	Shell	Shell	Shell
Anti click	No	No	Yes	Yes	No	No	No	No
Build	Good	Good	V Good	V Good	Good	V Good	V Good	V Good
Casing	Plastic	Plastic	Metal	Metal	Plastic	Metal	Metal	Metal
Fixing	Screws	Clips	Screws	Screws	Screws	Screws	Screws	Screws
External finish	V Good	V Good	Good	Good	V Good	V Good	V Good	Good
Repel solvent	AC	ABC	ABCD	ABCD	ABC	ABCD	ABCD	ABCD
Repel fire (30s)	No -1	No -10	Yes	Yes	No -15	Yes	Yes	Yes
Repel scratches	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Repel liquids	No	Yes	Yes	-	Yes	No	No	No
Repel dust	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Extreme stress	Pass	Fail	Pass	Pass	Pass	Pass	Pass	Pass
Pull b'away (g)	400	800	400	1,600	1,000	1,000	600	2,600
Pull running (g)	400	200	400	1,400	800	1,000	400	1,800
Mechanism	Int	Ext	Ext	Ext	Ext	Ext	Ext	Ext
Eject throw (mm)	7	2	2	7	7	2	6	-
Eject pressure (g)	600	700	700	600	800	700	800	-
Price	**£99.99**	**£74.99**	**£65**	**£110**	**£84**	**£65***	**£65***	**£99***

* These prices may vary greatly depending on the supplier and badged name.

AMIGA SHOPPER BEST BUY

POWER DUAL DRIVE

Quite simply, the best all-rounder of the lot. The internal PSU means no strain on the A500's power unit. The double-deck configuration is cost-effective – cheaper than two single drives. While not quite as attractive as the Roctec or Cumana singles, Power's dual drive still looks very good on a desktop.

AMIGA SHOPPER BEST BUDGET BUYS

ROCTEC RF302, RF332 AND POWER SINGLE

All these can be picked up for £60 or so. Strong construction, good design and durability all serve to make them the obvious choices – not forgetting the Power drives' brilliant anti-click feature.

Summary of test criteria

THROUGHPORT: Throughport compatibility test determined if drives from different manufacturers could be connected to each other

REPEL SOLVENT: Four different solvents and bleaches commonly found in the household environment were used, ranging from 'A': a mild bleaching agent to 'D': a powerful solvent. Five ml was applied to the case and allowed to stand for 20 minutes. The cases were then cleaned, dried and inspected for damage. A letter here indicates a pass.

REPEL FIRE: A yellow flame was played on the casing for 30 seconds or until the surface showed visible signs of damage. It was known that the plastic cases would not survive; the figure shows time recorded before blemishing.

REPEL SCRATCHES: A sharp stylus was scraped along the drive's casing until the covering became perforated. All of the drives reviewed performed equally.

REPEL LIQUIDS: 300 ml of damn fine hot coffee was poured over the drive casing. A pass indicates that although liquid entered the case, it did not touch any sensitive components. The test was not conducted on Power Computing's dual disc drive as it is mains powered and would have frazzled our reviewer. Don't try this at home kids.

REPEL DUST: A known amount of fine powder was sprayed directly at the drive door under slight pressure. A fail indicates that more than 20 per cent of the powder entered the mechanism.

EXTREME STRESS: First, the drive was swung pendulum-fashion by its lead. Second, a large man stood on the casing. A pass indicates that the case did not crack or come adrift from its lead.

PULL BREAKAWAY: The amount of force (calculated as weight in grammes) required to start the floppy drive moving across an arbitrary surface when it is tugged by its lead.

PULL RUNNING: The force required (calculated as weight in grammes) to keep a drive moving across an arbitrary surface when pulled along by its lead.

EJECT THROW: The amount of eject button protruding from the unit when a disk has been inserted.

EJECT WEIGHT: The amount of force required to eject a disk using the drive's eject button.

Shopping List

See test results for drive prices.

CUMANA:
Pines Trading Estate, Broad Street, Guildford, Surrey
G3 3BH ☎ 0483 503121

GOLDEN IMAGE
Golden Image House, Fairways Business Park, Lammas Road, London
E10 7QT ☎ 081 518 7373

DIRECT DISK SUPPLIES
Unit 19, Teddington Business Park, Station Road, Teddington, Middlesex
TW11 9BQ ☎ 081 977 8777

POWER COMPUTING
44a Stanley Street, Bedford, Beds MK41 7RW
☎ 0234 273000

BUYING ADVICE FOR AMIGA SHOPPERS

Whether buying over the phone from adverts in Amiga Shopper or at a local computer store, here's our advice on how to avoid problems.

BUYING IN PERSON

● Where possible, always test any software and hardware in the shop, before taking it home, to make sure it works properly.

● Make sure you have all the necessary leads, manuals or other accessories you need.

● Don't forget to keep your purchase receipt.

BUYING BY PHONE

● Be as clear as possible when stating what you want to buy. Make sure you confirm all the technical details of what you are buying. Some things to bear in mind are version numbers, memory requirements, other required hardware or software and compatibility with your particular model of Amiga (that is, make sure you know which version of Kickstart you have).

● Check the price to make sure it's the same as the one advertised.

● Check that what you're ordering is actually in stock.

● Check when and how the article will be delivered and that any extra charges are as stated on the advert.

● Make a note of the date and time when you are making the order.

BUYING BY POST

As with buying by phone, you should clearly state exactly what it is you are buying, at what price (refer to the magazine, page and issue number where it's advertised) and give any relevant information about your system set-up where necessary. You should also make sure you keep copies of all correspondence both to and from the company concerned.

MAKING RETURNS

Whichever method you buy by, you can return it if it fails to meet any one of the following three criteria:

● It must be of 'merchantable quality'.

● It must be as described.

● It must be fit for the purpose for which it was sold.

If it fails to satisfy any or all of the criteria, then you are then entitled to:

● Return it for a refund.

● Get compensation for part of the value.

● Get a replacement or free repair.

When returning anything, ensure you have proof of purchase and that you do it as soon as possible after receiving it. For this reason it is important that you check the hardware or software as soon as it is delivered to make sure everything you ordered is there and works as it is supposed to.

HOW TO PAY

Paying by credit card is the most sensible way, whether buying in person, by post or on the phone, because you may be able to claim the money from the credit company even if the firm you ordered from has gone bust or refuses to help sort out your problem.

Otherwise, pay by crossed cheque or postal order, but never send coins or notes through the mail.

GETTING REPAIRS

Always check, when buying hardware, the conditions of the guarantee, servicing and replacement policy, so that you know what level of support to expect. Always fill in and return warranty cards as soon as possible and make sure that you are aware of all the conditions contained in the guarantee.

BUYING PD

Even though buying PD software is relatively inexpensive, you should still apply the same rules of confirming all transactions as clearly as possible and making sure that you keep accurate records of all communications.

Shopping around is still important when buying PD because different houses charge different prices for the same disks. There is no set pricing structure for disks, but bear in mind that PD houses are supposed to be non-profit making operations. AS

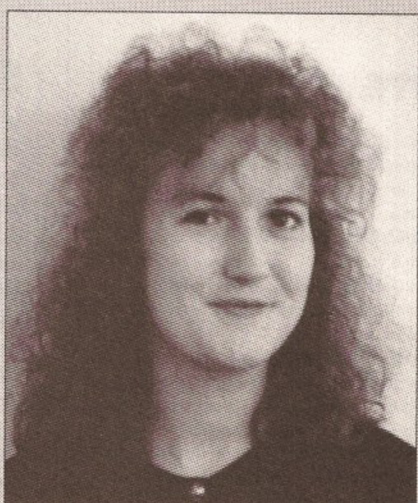
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We want to ensure that buying mail order through *Amiga Shopper* is a straightforward, hassle-free experience.

Taking the advice offered on this page will help make it so. But if, despite this, you run into problems – for example, failure to deliver goods within 28 days, without reasonable explanation – we will do our best to help sort things out.

Simply contact our Customer Liaison Officer, **Helen Kennedy** at **Future Publishing Ltd, 30 Monmouth Street, Bath BA1 2BW**, or give her a call on **0225 442244 ext 2176**.

Be ready to supply her with details of the advertisement you responded to, the goods ordered and precise details of the problem encountered. She will then do her best to solve your problem. However, please bear in mind that your first contact in any enquiry should be direct to the company you have ordered from. In 99 cases out of 100 they will be able to resolve any difficulties.



Customer Liaison Officer, Helen Kennedy, will try to sort out any major problems with advertisers.

FREE DEMO DISK

Did you miss Issue One?

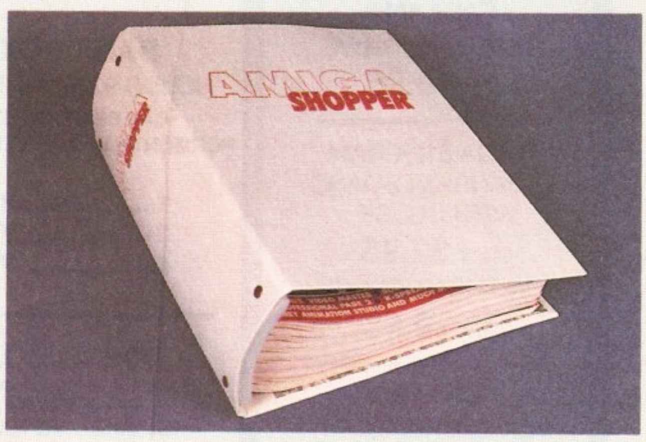
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The free demo disk not only gives you a chance to test out three superb programs, but gives you the chance to save money and get more from your Amiga. On it you will find:

- AMOS demo from Mandarin – find out why this programming tool has taken the Amiga world by storm and discover some useful examples that will be featured in our AMOS column.
- Devpac 2 demo from HiSoft – test out the highly acclaimed assembler program that's used by many top programmers and then take advantage of our special discount voucher to purchase it for £39.95 instead of the usual £59.95.
- RealThings demo from RGB Studios – delight to the demo that allows you to design, build and fly your own butterfly using Deluxe Paint III. Then take advantage of our special offer to get hold of an exclusive tutorial on disk for £12.95 that will help develop your art and animation skills.

NB If you wish, you can purchase the demo disk separately for just £1.75. Use the order form below.

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❑ CHEQUE Please make cheques payable to FUTURE PUBLISHING LTD and send together with this card to in an envelope the following address: AMIGA SHOPPER, FREEPOST, Somerton, TA11 7BR.

N.B. THIS OFFER CLOSES ON 30TH JUNE 1991

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AS/SP/0691

Software for free

Phil South dons deerstalker and elephant gun to hunt down more bargain goodies lurking on the wild savanna of the Public Domain



"Every month I'll be looking at all the very best PD software and reviewing a huge range of PD interests."
Phil South

BEGINNERS START HERE

Public domain software is free to anyone. That's right, even you. The concept of PD was borrowed from early mainframe systems where hackers, as the original computer freaks were called, produced programs and distributed them to their friends and fellow hackers, asking for no other payment than eternal fame and glory.

A PD program is one you can copy and use for free, provided you credit the author and pass on any documentation is distributed with it.

So, with all this free stuff flying about, what can you get? There is stacks of handy software about, including utilities, applications, demos (graphics, games and music), disk magazines and much, much more.

If you haven't got a modem to download software from a bulletin board, you'll have to buy some. But you thought PD was for free. It is, but disks, postage and the wages of those who sit all day at the copying machine aren't, so be prepared to pay between 99p and £2.50 per disk.

The price you pay is up to you, although some people get a bit cross at paying £2.50. It depends on where the PD house buys its disks and the cost of duplicating software. If the supplier has built its PD operation into an existing business, that can help bring overheads down. Anyway, it's up to you. Some 99p houses are good, others are terrible.

The only way to find out for sure what is worth having is to send off your 99p, suck it and see.

Or, even better, to make sure you read *Public Domain World* in *Amiga Shopper* every month.

Welcome back to the Public Domain, where software is free, pigs fly and sheep wear peopleskin jackets. It's fun being able to swap software willy nilly, although you should make sure that the software you are swapping really is public domain. Do you read all the docs on a disk before copying or spreading it? You should, because some could possibly be shareware, or even licenseware.

Shareware means that although you can copy the disk and give it to people, both you and the person you give a copy to must both pay the shareware fee. Licenseware is different. Although you get it through a PD house, it is licensed to that PD house by the author and he gets his own cut of the sales.

Right, lecture over. Let's take a look at what's on offer from this month's selected suppliers. First off ...



"Hey Blackie, do you get many floppies at One-Eyed Jacks?" Audrey takes a Fenn-tastic detour from *Twin Peaks* to the Public Domain.

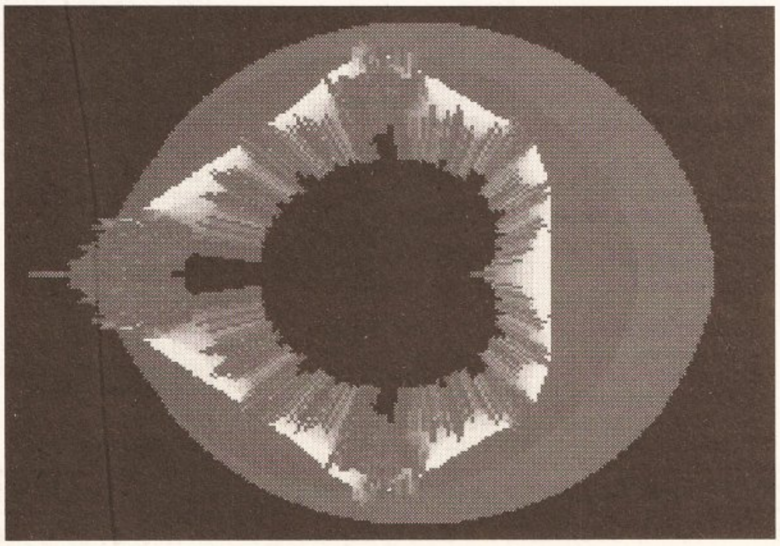
17 Bit Software

Seventeen Bit Software has been around for a while and boasts some 1000-odd disks in its catalogue. The foundation of the 17 Bit name has been graphics and demos, and this is really what it specialises in.

Apart from the demos it is famous for, the company also supplies the *17 Bit Update* disk magazine (12-issue, £9.95 plus 16-page paper mag) and the excellent *UGA Newsflash* disk mag (£2.99 for two disks). As well as all that, the firm has branched out into commercial software with Team 17. The first game from this crew will be out very soon; a half-megabyte game (although most future releases will be 1Mb only) priced at £9.95.

Team 17 is based around a bunch of ultra-talented 17 Bit regulars, such as Martyn 'Spadge' Brown, Nico Francois, Allister Brimble, and Tobias Richter, so the quality of the coding and graphics should be very good indeed.

When I told the folks at17 Bit about the PD column, they reacted with typical gusto and sent me a stack of disks that would choke an elk. So here is the cream of the crop.



You may have seen fractals, but get your head around 17 Bit's *Trial 'n' Error Utilities* disk on which global update acquires new meanings.

Trial'N'Error Utils (disk 838)

A fun-packed disk, choc-full of very interesting utilities. There are loads of them so here is a selection:

Fractals is less yawnsome than some fractal programs I've seen. It does a range of fracs you very rarely

Continued on page 115

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see, as well as mapping 3D fractals onto a sphere, which I haven't seen done anywhere else.

DiED is the *Digital Intelligence EDitor*, a text editor for programmers, and it looks very nice. Don't confuse text editors with word processors though. Text editors are for preparing source code and a little bit of documentation. The facilities you get in them reflect that kind of use.

PCopy is a copying program that doesn't copy anything other than AmigaDOS disks. This may sound like no use at all, but it is a very user-friendly program. If you've ever been stuck at a computer show duplicating disks and answering questions at the same time, this will impress you. The program prompts you at every stage, so you always know where you are.

Double Action is a file cruncher – a bit like *Powerpacker* – written, in this case, by Vince of Tristar. The program compacts files so they can still be run as normal, but take up much less disk space.

Formatter is a new fast format program that works on Workbench. Start it by clicking the icon and a little multitasking window appears on the screen. Altering the buttons and pressing GO formats a disk much faster than in the usual stupid AmigaDOS way. It does it better than by the regular method of selecting the disk, using the Initialise menu and waiting till the cows come home before you can do anything else with the disk. The other neat thing about *Formatter* is that it allows you to type a name for the disk as you format it; something more meaningful than Empty or Blank. If you know what the disk is to be called then you can name it in the first place, which is much more elegant.

And then there's *PBar*, a program that lets you re-design the pattern on the drag bar of your windows. Why? Oh well, it's a bit of fun I suppose. You design the bar, then save it to disk. Not only does it give you an icon to click and change the pattern, but magically the icon has a little drag bar on it with the pattern you designed on it. Pretty impressive. Some coders just make you want to spit, don't they?

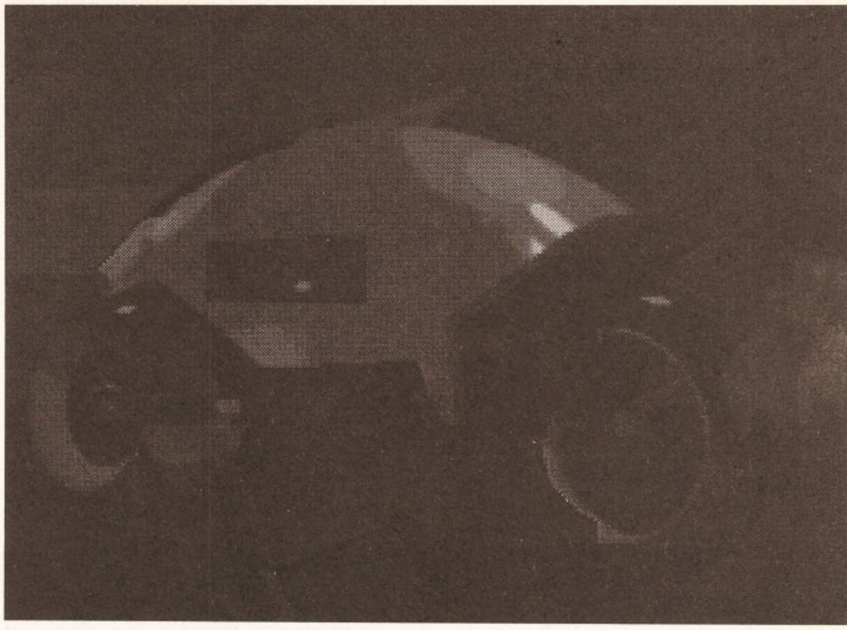
All the utils on this disk are, at the very least, a bit on the interesting side. At best they are extremely useful. I can think of at least four of them I would install on my hard disk right now as they'd really improve my productivity. If I actually had any productivity to start with, that is.

Value for money 9/10

Light Cycle Demo (Disk 861)

This is a really stunning bit of animation and destined to become a classic. It's a shame the subject is so old, but then *Tron* is a cult film so it may be okay to still use it in modern demos. This is a reet big animation, and only works in 1Mb machines. It goes on for ages, and I really don't fully understand how the author managed to cram all those graphics and sounds into it. The samples, all taken from the video cassette of the film, I assume, are very long and quite finely detailed considering the length of them. A very fine balance has been struck between sound and action, and almost everything that happens on-screen has a sound effect. A tasty piece of work.

Value for money 10/10



Bags of sound and action is on offer in the *Light Cycle Demo* as Jeff Bridges and his chums storm around the innards of your machine.

Command.Com (Disk 866)

This is a special command set for single-drive users. It gives you a set of DOS commands in RAM, which means you can put disks in and out of the drives and use them without always having to put the WB disk back in. The program installs itself, and you can even apply it to other disks just by typing INSTALL COMMAND.COM.

Value for money 7/10

Share And Enjoy Amazing Tunes II (Disks 842-844)

A really great music demo, with some very good graphics and animation to accompany the huge range of tunes from various crews. The tunes are very skilfully programmed, but it's a shame that the SAE team supplies the disk in a copyable but not Workbench-readable disk. This means that although the disks will boot, you can't look at the tunes and take the sequences or samples apart. Such a facility would have been very instructive, and it's a pity that SAE was more interested in showing how complex it can make a disk format rather than thinking that someone might learn something from the music. An extremely good set of disks though, and well worth a look.

Value for money 8/10

Continued on page 116

ET O' FISH • FILLET O' FISH • FILLET O' FISH • FILLET O' FISH • FILLET O' FISH

Fred Fish is one of the most prolific collectors of PD software on the Amiga, and his collection borders on 500 disks. The Fish Disks are one of the most popular ranges of PD software available for the Amiga, for their mixture of games and utils. As you can see from some of the listings, Fred chooses only the most interesting stuff. So check your favourite PD library for the Fish Disk, or take a look at this listing of recent additions to the Fish List.

Disk 421

DMouse: A screen & mouse blanker, with auto window activator, mouse accelerator, popCLI, pop window to front, push window to back, etc.
EZAsm: Combines parts of the 'C' language with 68000 assembly, giving it the 'feel' of a higher level language.
NoVirus: An excellent anti-virus utility.
Zon: An arcade/adventure game mixing a unique blend of puzzle solving and arcade adventure.

Disk 422

Gravity: A program that simulates movement of astronomical objects under the influence of gravity.
Imploder: Allows you to reduce the size of executable files while they retain full functionality.
PopUpMenu: Enables you to use pop-up menus with programs that use standard intuition menus.
SystemTracer: A tool to view and manipulate various AmigaDOS 1.2 and 1.3 system structures.
TrackDOS: A program that allows easy transfer of data between DOS, memory and trackdisk.device.
TrekTrivia: Very nice mouse-driven trivia-type program for *Star Trek* fans.

Disk 423

Hollywood: An easy-to-play trivia game with such subjects as *M*A*S*H*, *Star Trek* (old and *TNG*), *Indiana Jones*, general television trivia, and more.
LCDCalc: Probably the prettiest looking four-function (with memory) calculator ever written.
Pogo: Another of Eric Schwarz's cute animations.
SetRamsey: A program that allows you to test the current settings of the RAMSEY ram controller chip on an Amiga 3000 under Kickstart 1.3 or 2.0, and change them if you wish.

Disk 424

AutoCLI: A 'PopCLI' type replacement that works with WorkBench 2.0.
MED: A music editor much like *SoundTracker*.
TurboTitle: A program created for the purpose of subtitling Japanese animation films and to create a standard Amiga subtitle format.

Disk 425

A-Gene: Demo version of a shareware genealogy database program.
CheckBook: A checkbook recording program to be used as a companion to a checkbook register, not as a replacement.
Downhill: A skiing arcade game.
HeadGames: A shoot-em-up game using *SEUCK* game constructor, with digitized heads as enemies.

Disk 426

Conman: Extremely useful replacement for the standard console handler. It provides line editing and command line histories
Metro: City planning game.
RickParksArt: A collection of artwork from Rick Parks, one of the leading Amiga artists in the USA.

Disk 427

BlackJack: A program that can simulate nearly any casino blackjack game in the world.

Continued on page 116

Continued from page 115

Fenn-Tastic Vol 1 (disk 830)

Sherilyn Fenn is the actress who plays the sexy, and slightly bonkers, Audrey Horne in the cult TV show *Twin Peaks*, and this is a slideshow devoted to her.

There are no nudes here, if that's what you're thinking, just video grabs from the film *Two Moon Junction*, *Twin Peaks*, and a television interview of Sherilyn on *The Word*.

There are two more disks of pics for all you Sheriphiles: disk numbers 831 and 848.

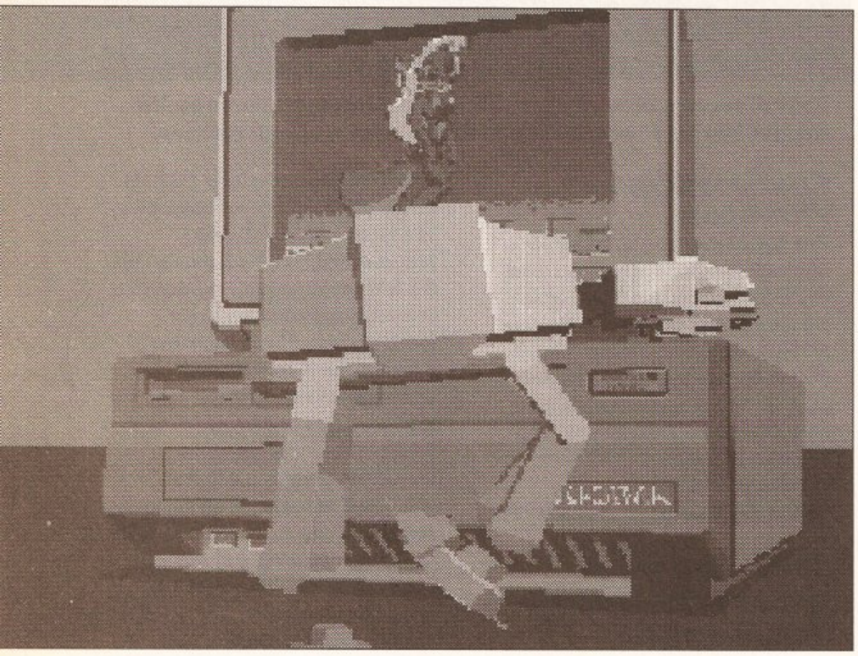
Value for money ....5/10 (8/10 if you like Ms Fenn)

Can Do PD Library

The CanDo PD Library has just been set up to support Innovatronics's *CanDo* Amiga authoring system, by which a lot of very powerful programs can be created.

The first three disks are brimming with good ideas and, although most have been made able to run so you can't edit them with *CanDo*, some are easily altered to your own ends. If you don't have a copy of *CanDo*, then you really ought to try it.

The CanDo PD Library invites contributions from *CanDo* users and gives a free *CanDo* T-shirt for the best bit of PD received every month. So get your *CanDo* applications off to the library at the address given at the end of this article.



Galloping all-terrain hardware! What awesome weapon could have put the willies up this AT-AT from NBSs well animated demo disk? See page 118.

CanDo (disk 1)

The first disk contains a lot of utilities and games. Some of the programs, especially the stand-alone decks, have been given new icons so you wouldn't even know they were *CanDo* applications if you weren't getting them off the CanDo PD disk.

RexxBrowser is an ARexx comms program that lets you operate ARexx manually, sending data between programs that have an ARexx port fitted to them. (If you don't know what ARexx is, then I'll just say it's a very useful system tool which enables different programs to send data back and forth.) For example, I sent a message to my copy of *Transcript*, which was multitasking away behind my workbench, and it opened a fresh document. I could have passed some text to the document too, but my knowledge of ARexx is a little shaky.

Key2C is a resident C reference manual that reminds you of all manner of important C commands – very handy for your average new C author who is unsure of the basics.

Silmon is a version of the *Simon* guessing game that was a very popular plastic computer toy of the late 1970s, as I recall.

Chameleon is a program that lets you store all manner of different colour schemes for your workbench.

Value for money 8/10

CanDo (disk 2)

The second disk contains more utilities and games. This time it includes some very hard games to program by any other means, such as a *Tetris* clone called *CanTrix*. *VideoLib* is a library for your video cassettes, which can be added to so you can catalogue your entire collection in one easy-to-use program. *Senso* is another *Simon* game, but this time a bit more complex. There are some nice graphics and a bit of sampled music by the Swiss band Yello. *XtraTools* is a couple of bolt on modules for *CanDo* which enable you to read keys from the keyboard a bit more readily. There's also another ARexx program that sets up two windows to demo how ARexx communicates between windows. Type into one window and it is read by the other.

Value for money 5/10

CanDo (disk 3)

The last disk contains a graphic front-end for the Manx C compiler and a bunch of programs by two guys called Mike Ford and James Palmer. James has a game called *Duck Hunt*, and you can probably guess how it goes. It's quite hard and I didn't really hit anything but two ducks. So good luck on that one.

Mike Ford obviously has a more technical bent as he supplied two programs, *Minibench* and *MiniARC*. The first program allows you to find and execute a program from your hard disk without having to search around on the disk for it. Good for any programs you use regularly. And the *MiniARC* program is a sort of front-end for any archive programs you might have, like *ARC*, *lharc*, *zoo*, and *zip*. The program opens a

Continued on page 118

Fillet o' Fish • Fillet o' Fish • Fillet o' Fish • Fillet o' Fish • Fillet o'

Continued from page 115

Chemesthetics: A program that draws molecules using the Calotte model.
Cyrillic: Russian 12-point font.
STV: Simple text viewer with mouse and keyboard scrolling, text search and hooks to be launched on to custom screens.

Disk 428

BCBMusic: A set of three original songs written and composed using the freely distributable *MED* 2.1 music editor.
CyroUtils: Four handy animation utilities from Cryogenic Software.
ShadowMaker: Demo version of an Intuition-based font shadow generator.
Train: An electric train contruction set game.
WonderSound: An additive harmonic instrument design tool, with a separate envelope design window and 16 relative harmonic strength and phase angle controls.

Disk 429

ATCopy: A program fo copy files from the Amiga side of a system equipped with a PC/AT bridgeboard, to the PC side, using wildcards.
CLImax: A command like NewCLI or NewShell, except that it creates a borderless CLI or Shell window on a custom screen.
Dr: An alternative CLI directory lister command.
FixCLI: A tiny pure command which fixes problems with CLI's not created by other CLI processes.
MoveSYS: Reassigns SYS:, C:, S:, L:, LIBS:, DEVS: and FONTS: to a new disk or directory in one step.
RunBack: A very compact version of the popular utility for starting a CLI process in the background, without preventing the CLI window from closing.
Scrub: A floppy drive cleaning program that automatically detects which drive has a cleaner diskette in it.
Timer: The timer device made easy!
Tripppin: A Workbench game based on an out-of-print board game.
Uedit-Stuff: A variety of configuration material for Uedit.
V: A front end for Commodore's *More*, or some other text viewer that can be made resident.

Disk 430

Lotto: Small lotto number selector with C source.
Pointer: Enables you to use the SID sleepy pointer in your own programs.
SculptTools: Programs to create objects for use in Sculpt 4D.
SmartFields: SmartFields is a replacement for Intuition string gadgets.

Disk 441

Deksid: A disk and file hexadecimal editor.
DiskPrint: Prints labels for 3.5" disks, primarily for PD library disks.
Dme: Version 1.42 of Matt's text editor.

Disk 442

ToolManager: Use to add your own programs to the tools menu of the 2.0 Workbench.
UUCP: An implementation of uucp for the Amiga, including mail and news.

Disk 443

DICE: Dillon's Integrated C Environment.
UUCP: An implementation of uucp for the Amiga, including mail and news

Disk 444

ChinaChallenge: A Chinese tile game, similar to *Shanghai* or *Mahjong*.

Continued on page 118

P. D. DISK PRICES

1 - 9 disks = £1.50 each
10 -19 disks = £1.25 each
20 or more = £1.00 each

PLEASE NOTE:
2 disk sets are charged as 2 single disks, 3 disk sets as 3 single disks, etc.

POSTAGE

is included in the price if you live in the U.K.
Europe add £1.50 to order
Rest of World add £2.50

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may be made using any Visa, Access or Mastercard on
(0709) 829286

A CATALOGUE DISK

is available free of charge. To obtain yours, send us a stamped addressed envelope (9" x 6"), or ask for one with your order.

ABBREVIATIONS USED

* = 1 meg needed
(X) = 18 and over only (please state age)
Figures in brackets refer to number of disks in set.

DEMOS & ANIMATIONS

016 Space Ace Demo
085 Red Sector Megademo (2)
089 Gymnast Animation *
103 Wild Copper Demo
107 RAF Megademo (2)
127 NewTek Demo (2) *
157 Cool Cougar Animation *
161 Kylie Minogue Demo (2)
240 Puggs in Space Cartoon
261 Deathstar Megademo (2)
280 Tree Frog Animation *
288 The AMOS Demo
298 Unicycle Animation *
399 NewTek Demo 3 (2) *
447 Micro Mix Demo
483 Elvira Demo
499 Showbiz Animation *
568 Wings Animation
646 Predators Megademo (2)
711 Arcadia Megademo
744 Red Sector Cebit Demo
747 Popeye Meets Beachboys
762 The Run Animation *
771 Congaman Animation *
773 Shark Animation *
821 Popeye Demo / Game
825 Budbrain Megademo (X)(2)
853 Dragons Lair Demo *
854 Bread/Home & Away Demo
865 Coma Demo
881 Flash Megademo (2)
895 Trip To Mars
897 Scoopex Mental Hangover
903 Shadow of Beast 2 Demo
906 Madonna Cartoon *
944 Magnetic Fields CD Demo
946 Subway Clapping Hands
947 Mars Flight Animation *
954 Teenage Turtles Demo
964 Operation Vark!

GAMES DISKS

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680 Learn & Play (2)
689 Eat Mine
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766 Treasure Hunt (Age 6-10)
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962 Drip!
987 Snakepit
991 Jeopard *
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1245 Rings of Zon *
1283 Sub Culture
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1434 APD85: Reversi / Snakes
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1509 APD102: Chainsaw Death *
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546 Iconmania!
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633 Analyticalc
642 C Manual
643 SID v1.06
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682 Sound Applications (2)
684 Video Applications (2)
697 Graphics Management (2)
901 THE Comms Disk
902 QED Text Editor
950 Mercenary Virus Killers Disk

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044 Batdance Remix
052 Awesome Sounds
061 J M Jarre - Definitive
166 Vangelis *
187 Crusaders Audio X
237 Zee's Hip Hop Music Disk
335 Girls Need Love
398 Powerlords: Power Musix 1
407 CD Player *
409 Crusaders: Freakd Out!
424 Made in Heaven (2)
497 Amiga Chart 5
518 Bopus Polupus
534 Vision Music Masters
552 Music Invasion 3 (2)
654 Powerlords Power Musix 2
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1105 Crionics Neverwhere Demo
1110 Fractal Flight
1188 Fillet The Fish
1190 Pussy : Innership
1200 Raiders of Lost Ark Anim *
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1231 Awesome Game Demo
1235 Kickboxer Demo
1238 Evil Dead Demo (X) *
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1529 Armageddon Demo *
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SLIDESHOWS

078 Vallejo Fantasy Art (2)
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238 TV Sports Basketball
282 Forgotten Realms
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1452 AmiBase
1473 ARP 1.3
1514 APD107: AMOS Progs. 6
1521 FS3 Sprites (needs AMOS) *
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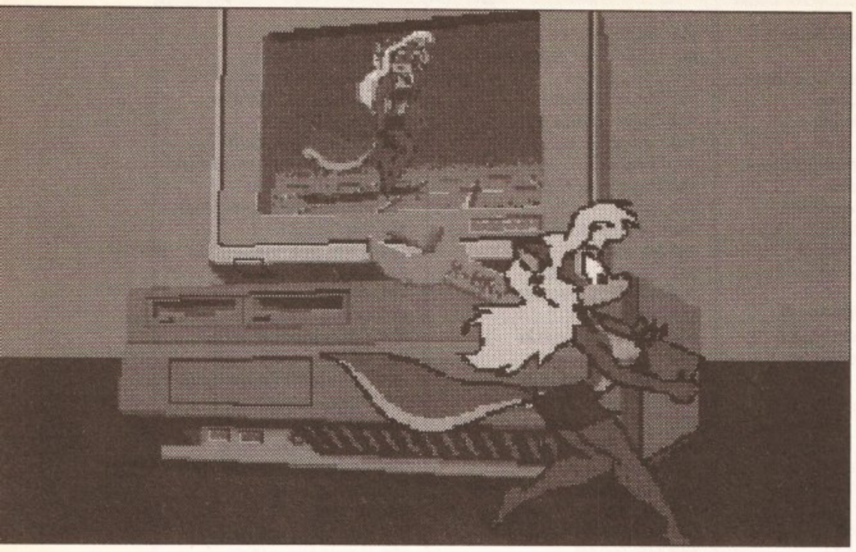
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Aha! The squirrel strikes back with a standard Ewok-issue can opener. I get the impression there's a very strange imagination lurking at NBS.

Continued from page 116

window on the workbench and lets you archive any files you might have in a very swift and interactive way. So much better than all that fiddling around with the CLI.

Value for money 7/10

So the efforts of CanDo library get a great big hearty slap on the back from me. If the forthcoming disks are anything like as good as the first three, then CanDo could well become one of the most indispensable libraries around.

BEST OF THE REST

Demos

There was a time when you really had to scratch around for demos of any real quality. Now they're all over the place. Here's this month's batch.

SQUIRREL AND AT-AT (NBS)

A very amusing animation with a sexy squirrel girl chasing an AT-AT, just like in the Imaginetics demo of the golden age. It's good to leave running on the monitor when you leave the computer for a while. You should see people watching it to see if anything else happens.

Value for money 5/10

POPEYE GAME (Amiganuts United 1019)

A demo featuring a clone of one of those tiny pocket-video game-watch things. Very amusing and, although it doesn't do much, it's very addictive.

Value for money 6/10

FISH TANK SIMULATOR (Comp-U-Save X281)

A fine piece of concept art, but as a program it bores after about ten minutes. Nice for owners of big hard disks and memories to try to patch it in if you don't touch the mouse for a longish while, ho ho ho. I fooled somebody who came to see me the other day. They actually thought I had a fish tank in my office. Nice digitised pics of fish, though it loses points for the lack of animation. It would be nice to see a real Full Motion Video version of this idea for CDTV. Now that's what I'd call a piece of shareware.

Value for money 4/10

Utilities

Another nice trend at the moment is the upsurge of the utility in the public domain. There was a time when you had to get a Fish disk if you wanted any utils (although they are a good source, as we'll see in a minute).

Now there are some houses that specialise in utilities and utilities only. And the quality has really gone up too, but the price you pay for this progress is shareware and licenseware. But please, as I said before, do make sure you pay for these disks and don't just copy them from a friend. Most of them are very cheap, and your contributions keep these guys going.

RED SECTOR DEMO MAKER (Virus Free 1202)

This is a brilliant demo making program from Red Sector which allows you to make your own demos with logos, music and vector graphics, just like the pros do and with the barest minimum of fuss. There isn't much in the way of docs on the disk, so you will have to make it up as you go along, but very good it is. There are some default setups on the disk to get you going, but after that it turns into an uphill struggle.

Value for money 8/10

OCTAMED (Amiganuts pre-release)

An eight-channel version of *MED* from the writer of *MED* 3.0.

This really is a startlingly good product, and although it is only a beta test version, I'm told that the Finnish author is beavering away to bring it to market ASAP. Fantastic editing, just like *MED* 3.0, but with eight channels to play with.

Value for money 10/10

C PROGRAMMERS' GUIDE (Amiganuts United 990)

A four-disk set with C source code and docs plus compiled examples. The guide takes you through everything you ever wanted to know about programming in C on the Amiga. Copy these examples and you'll be on the way to expertsville.

Value for money 7/10

G'night from Snouty

If you have any questions about PD or some viewpoint you might like to share with me, then why not drop me line at PD, *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW. Or why not email me on CIX (snouty@cix), Prestel (219997854), Telecom Gold (74:mik2077), or The Direct Connection (uad1135@dircon.co.uk). AS

FILLET o' FISH • FILLET o' FISH • FILLET o' FISH • FILLET o' FISH • FILLET o'

Continued from page 116

EliteBBS: An on-line message and file handling system.
MissileCmd: A fast missile command game written in assembly.
RegExpLib: Shared library that implements regular expression-pattern matching.
UltraF-4: Demo version of a super graphics-based floppy format program that can format four floppy disks at the same time and even format disks that other programs give up on.

DISK 445

MWTape: A tape handler using scsi.device to implement serial access to streaming tape devices.
OptMouse: A program that allows you to use a Mouse Systems M3 serial mouse on the Amiga and instructions that allow a serial mouse to be modified to plug directly into the Amiga mouse port.
Tar: A port of a UNIX tar clone that can work with the TAPE: handler (also on this disk) to read and write UNIX tar compatible tapes.
TurboText: An almost fully operational demonstration copy of a new sophisticated text editor for the Amiga.
UUCP: A bug fix for UUCP 1.08 released on disks 442 and 443, which had already been finalised at the time this fix reached me so could not be included there.

DISK 446

CanonBJ: A printer driver for the Canon BJ series of printers.
GamePort: Toolkit with link time and shared libraries allowing access to the GamePort device.
Input: A toolkit with link time and shared libraries that allow easy access to the Input device.
PointerLib: A disk-based shared library which provides programmers with easy access to custom pointers and a consistent user-selected busy pointer.
Post: An excellent PostScript interpreter for the Amiga which implements the full Adobe language.

DISK 447

AmiBack: Demo version of a new backup utility.
BackPac: Demo version of a new backup program.
DFC: Disk Format and Copy program.
FlashBack: Demo version of a new backup utility.
SMan: A Mandelbrot generation program.
TCL: Port of Tool Command Language, a simple textual language intended primarily for issuing commands to interactive programs such as text editors, debuggers, illustrators, shells, etc.

DISK 448

AmigaPet: Another screen hack by Patrick Evans.
FifoDev: FIFO: is like PIPE: but is based on fifo.library rather than its own implementation.
Mkid: A program identifier database package that provides a logical extension to 'ctags'.
NightMare: A handy little program that uses shock techniques to scare people.
OnTime: Holds up a task until a given time and then releases it to run.
PicToANSI: Converts a one-bitplane 320x200 IFF picture to a file that displays the picture on any ANSI compatible terminal.
SolitaireX: A solitaire game.
ST2Amiga: Convers Atari ST format relocatable executables to Amiga format relocatable executables, for subsequent loading into the ReSource disassembler and conversion to Amiga.
Swish: A small simple screen hack that pushes the screen around using the view port and simulates a floating motion.

Continued on page 121

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123 ST-91 Lots more samples
604 ST-92 More Greatest Samples
605 ST-93 Big Mega Samples disk
613 STARTREKKER 1.2 AM/FM Synth,MIDI,8 Channels

ANIMS AND SLIDESHOWS

137 - 138 SILENTS FANTASY Arty Style pics
139 REAL 3D Fantastic Ray Traced Pictures
192 THE WALKER DEMO An old Classic - Brilliant*
398 FRACTAL FLIGHT Incredibly fast Flight anim*
452 ENTERPRISE LEAVING DOCK Very impressive*
453 EPIC PREVIEW Game coming soon from Ocean*
456 STEALTHY ANIMATION Funny Cartoon Style Anim*
458 STAR TREK FLEET MANEUVERES Impressive ! *
623 BATMAN MOVIE As reviewed, Quite funny*
627 DEMONS SLIDES 3 Very good graphics slideshow
634 MINER ANIMATION Nice skulpt animation*
654 RELIANT ATTACKING Another Superb TR Anim*
655 HUEY 2 Helicopter Taking off* Reviewed in AF20
656 STAR TREK PINGPONG FlyBy anim by T.Richter*
667 - 668 LIGHT CYCLES Animation from the film TRON *

GAMES AND PREVIEWS

296 RA GAME PREVIEW Egyptian type game
446 BIONIX Superb Arcade ShootEmUp
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225 DIGITAL CONCERT 5 The Power, Kaos,Touch Me
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424 SOUND OF SILENTS Incredible Music disk !
425 DIGITAL CONCERT 6 Another Housey remix
532 CRUSADERS - A FEW TUNES Very well composed
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607 IRAQ DEMO The disk they tried to stop !!!
608 CRUSADERS GENESIS Very nice Genesis songs*
611 FARTS AND BELCHES No comment ....
621 BANGING RAVES 2 Follow up to Banging Raves
628 AMIGADEUS CLASSIC MUSIC Mozart Amigatised !!
645 SYSTEM VIOLATION DEMO Wicked demo by Anarchy
646 MADNESS II BY DAN/ANARCHY Its Insane !!!
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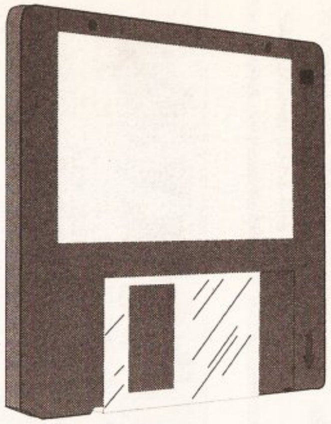
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Continued from page 118

DISK 449

Globulus: Demo version of a new arcade game that is reminiscent of the old *Q-bert* game.
Handshake: A fully featured VT52/VT100/VT102/VT220 terminal emulator.
Iff2Ansi: Turns any two-colour low-res IFF picture into ANSI text that can be displayed on any ANSI-compatible terminal.
Shazam: A picture viewer for Dynamic HiRes images created with *Macro Paint*, the 4096 color high-res paint program from Lake Forest Logic.
WonderSound: *Wondersound* is an additive harmonic instrument design tool with a separate envelope design window and 16 relative harmonic strength and phase angle controls.

DISK 450

AmyVsWalker: Animation from Eric Schwartz.
MinRexx: A simple ARexx interface that can be easily patched into almost any program.
Tabu: A useful quarter-inch cartridge (QIC) tape backup utility.
UUCP: A bug fix for UUCP 1.08 released on disks 442 and 443, which had already been finalised at the time this fix reached me, so could not be included there.

DISK 451

'Liner: A shareware outliner that creates outlines for notes or exports to other programs.
Convert: Converts 39 different image formats into CBM-standard 24-bit IFF files for display on devices such as Black Belt Systems' *HAM-E* product.
ProDrivers: AmigaDOS 1.3 printer drivers for the IBM 4201 and 4202 series of printers.
RCS: The Revision Control System (RCS) manages multiple revisions of text files.
RRamDisk: Another recoverable RAM disk.
SnoopDos: Utility for monitoring AmigaDOS calls.

DISK 452

Budget: Program for managing personal finances.
FLODemo: *Floorplan Construction Set* demo.
ImageLab: A program that performs image processing on IFF pictures.
MandelPAUG: A version of *MandFXP* with complete on-line help, a fully implemented Mandelbrot and Julia set 'movie mode', and many improvements in the user interface.

DISK 453

AmigaTration: A *Concentration*-like game for the Amiga in which you locate matching tiles on a grid that can range from 4x4 (easy) to 12x12 (difficult).
Lemmings: Demo a new game from Psygnosis.
ProjMot: A projectile motion plotter.
Quick: A utility program specifically targeted at hard-drive users to eliminate the frustration of launching programs on the Amiga.

DISK 454

Decigel: A software fix for programs using instructions that are privileged on the 68010/020/030.
Enforcer: *Enforcer* uses the MMU to build protection over anything that's not legal memory.
Redaktu: A PostScript program that runs on PixelScript to edit other PostScript programs.
StillStore: A program designed for freelance, corporate, and broadcast television.
Vortex: A universal-accented character converter for Amiga, IBM-PC, MacIntosh, and C64 files written in most west european languages (Danish, Finnish, French, German, Italian and more).

DISK 455

AngusCopy: A disk copy program with intuition user interface.
ConvMacF: Converts MacIntosh type 1 Adobe fonts to a format usable on the Amiga.
MemMon: A small memory monitor.
Vlt VLT is both a VT100 emulator and a Tektronix (4014 plus subset of 4105) emulator, currently in use at SLAC (Stanford Linear Accelerator Center).

DISK 456

CheatSheet: Compilation of cheats, hints, backdoors, passwords, codes, solves, and walkthroughs for more than 150 Amiga games.
CManual: Parts one and two of a complete C manual for the Amiga which describes how to open and work with Screens, Windows, Graphics, Gadgets, Requesters, Alerts, Menus, IDCMP, etc.

DISK 457

CManual: Parts three and four of a complete C manual for the Amiga. See Disk 456.
Line: A Shell written to enhance the bare-bones CLI with features that many people find useful in the UNIX csh, including history, aliases, etc.
QuickReq: An 'Ask utility' to replace the 'ask' command from AmigaDOS.

DISK 458

ATCopy: A program to copy files from the Amiga side of a system equipped with a PC/AT bridgeboard, to the PC side, using wildcards.
Csh: Version 4.02a of a csh-like shell derived from Matt Dillon's Shell, version 2.07.
GIFMachine: Converts CompuServe GIF image files into IFF SHAM and 24-bit ILBMs.
TeXify: ARexx scripts for *CygnusEd* users allowing control of AmigaTex from within CED.

DISK 459

AmiDock: An Amiga version of the NeXT's 'dock', but more versatile and not as limited.
Conquest: *Lore of Conquest* is a war game similar in concept to the board game *Risk*.
Rxgen: An ARexx library that allows you to call any function of almost any Amiga library from an ARexx program.
XprZmodem: An Amiga shared library which provides ZModem file transfer capability to any XPR-compatible communications program.
Zoom: A fast and efficient floppy disk archiving utility based on the data compression/ decompression algorithms used by lh.library.

DISK 460

JMenu: This program allows an AmigaDOS script to display a menu, wait for the user to make a selection, either with the mouse or the keyboard, and return the selection back to the script through an environment variable.
NetHack: A screen-oriented fantasy game in which your goal is to grab as much treasure as you can, retrieve the Amulet of Yendor, and escape the Mazes of Menace alive.
ShadowMaker: Demo version of an Intuition-based font shadow generator.

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Seventeen Bit Software
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Start Computer Systems
Barbican House, Bonnersfield, Sunderland SR6 0AA
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PO Box 15, Peterlee, Co Durham SR8 1NZ ☎ 091 587 1195

Virus Free PD
23 Elborough Road, Moredon, Swindon, Wilts SN2 2LS
☎ 0793 512321

Workbench PD
1 Buccluech Street, Barrow-In-Furness, Cumbria LA14 1SR ☎ 0229 870000

NEXT MONTH

Issue three of *Amiga Shopper* is on sale on June 6 and is packed with the sort of stuff that has already made *AS* the number one mag for serious users of the Amiga.

We will be speeding you up by putting accelerator cards through their paces in a comprehensive survey and testing out all the compilers we can get our hands on. Then of course there will be all your favourite columns and much more.

CORRECTIONS

A slight mix up caused the pictures of the DAATAscan and Contriver mice to be switched on page 47 of issue one. (*You just can't trust those mice, scurrying all over the place – Ed*)

Apologies for an omission on the order form on the hardware project pages. We forgot to leave space for you to put your name and address. If perchance you have sent off for the anti-click kit and forgot to include your name and address, we suggest you contact Power Computing on 0234 843388 and let them know where to send it.

GUARANTEE YOUR COPY OF *AMIGA SHOPPER* BY RESERVING IT AT YOUR NEWSAGENT

Don't miss out on issue three of *AMIGA SHOPPER*. Every serious Amiga user in the country is trying to get their hands on this new magazine and you don't want to miss out. Over 100,000 *Amiga Format* readers saw the special preview issue and issue one sold out virtually instantly in many places. So, to guarantee your copy, either;

- Make sure you remember to rush into your local newsagent and buy it on the morning of Thursday June 1st.
- Fill in this form and give it to your friendly, neighbourhood newsagent, and they will make sure that it is reserved for you or even delivered to you. (Did you know that WH Smith and John Menzies will also save a copy of ***AMIGA SHOPPER*** for you?)

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EDITORIAL

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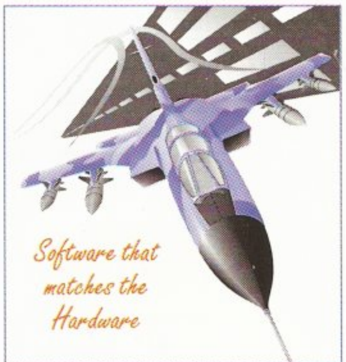
ADVERTISERS INDEX

HiSoft News

All the latest news and product information.

ProFlight takes off!

ProFlight, the extremely accurate and flyable Tornado flight simulator from HiSoft, is due for release on the Amiga by the end of May 1991.



First released on the Atari ST where it has won a high degree of critical acclaim from reviewers and users alike, ProFlight is not only one of the most technically realistic simulators around but it is also tremendous fun to fly.

You can fly peaceful reconnaissance missions or roar into attack after carefully planning your combat mission. ProFlight is supplied with a comprehensive, ring-bound flight manual for an all-inclusive price of £39.95.

SAS C5

SAS Institute (the parent company of Lattice Inc.) has taken over the development and sales of the Lattice C 5 compiler for the Amiga and released a new version, 5.10a.

The improvements and enhancements in this version establish SAS C5 as the ultimate Amiga C compiler. Upgrades cost £34.95 (ver. 5.0x), £79 (ver. 4.xx) or £99 (ver. 3.xx).

Pascal at last!



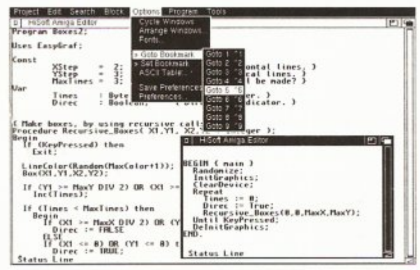
A brand-new version of the popular Pascal language will be available soon for the Amiga (A500 - A3000).

HighSpeed Pascal originally comes from Denmark, (the 'home' of Turbo Pascal), is extremely fast and friendly to use and is very closely compatible to the immensely popular Turbo Pascal on the PC.

Compilation speed is roughly 20,000 lines per minute on an A500 with excellent code generation for all the Amiga computers.

HiSoft is developing the package along with the original authors, D-House. Some of the features of this exciting new compiler are:

- Compile to memory or disk
- Unit concept as in TP5 allowing modular development and very fast compilation. Many standard Amiga-specific and Turbo Pascal compatible units are supplied
- Stand-alone compiler supplied. Multi-standard linker. Versatile Make facility
- Source include to a depth of 7
- Inline procedures. Source code control using conditional compilation



The HighSpeed Pascal Editor

- Integrated, multi-window editor with on-line help and interactive error detection and correction
- Numerous examples and helpful manual

HighSpeed Pascal should be available by the end of May 1991 at an inclusive cost of £99.95.



More and more...

In addition to ProFlight and HighSpeed Pascal HiSoft is set to release a number of other new products for the Amiga in early 1991, showing our increasing committment to the Amiga range of computers. To whet your appetite:

HiSoft C Interpreter

The ideal way to learn the difficult C language, HiSoft C is an interpreter with a fully integrated editor and debugger. Release is due by the end of June 1991 at a price of £49.95.

HiSoft Inspiration

This exciting new product makes it simple to design and use the Amiga's gadgets, requesters etc. in your favourite programming language. Release date is the end of March 1991.

Devpac and BASIC

HiSoft Devpac version 3 and HiSoft BASIC version 2 are due out in the first half of 1991. Both feature a brand new, multi-window editor, much more speed and a great many new features. Tick the box(es) below for details.

Meanwhile, we have some very special offers on our existing products - use the order form below (you can photocopy it if you wish). Devpac 2 and BASIC 1.05 contain coupons offering you the chance to upgrade to Devpac 3 or BASIC 2 for £35 and £45 respectively.

Use this order form to obtain your HiSoft Software directly from HiSoft and we will send you a Starter Pack consisting of a quality mouse mat (printed with the Amiga ASCII set), an attractive disk wallet and 4 double-sided disks, totally free of charge!

Please send me the following software:

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- ❑ HiSoft BASIC ver 1.05 £49.95
- ❑ HiSoft Extend Library £19.95
- ❑ HiSoft BASIC & Extend £59.95
- ❑ SAS / Lattice C 5 £229.00

Please send me information on:

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